ICONES FILICUM SINICARUM

BY

REN-CHANG CHING, B. S.

FASCICLE 2

中國蕨類植物圖譜

第二卷

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中國蕨類植物圖譜

ICONES FILICUM SINICARUM

BY

REN-CHANG CHING, B. S.

CURATOR OF HERBARIUM
FAN MEMORIAL INSTITUTE OF BIOLOGY

Hsen-Hsu Hu

FASCICLE 2, PLATES 51-101

第二卷

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TO

PROFESSOR HSEN-HSU HU, D. Sc.

DIRECTOR OF THE FAN MEMROIAL INSTITUTE OF BIOLOGY

AS ONE OF THE OUTSTANDING BOTANISTS OF PRESENT-DAY CHINA

IN RECOGNITION OF

HIS LEADERSHIP IN PROMOTING THE STUDY OF SYSTEMATIC BOTANY

IN CHINA AND

HIS SUPPORT IN VARIOUS MANNERS FOR THE ICONOGRAPHY OF CHINESE

FERNS FROM ITS INCIPIENCE AS ONE OF THE MOST RELIABLE MEANS OF

DISSEMINATING CHINESE PTERIDOPHYTIC KNOWLEDGE

THIS SECOND FASCICLE OF ICONES FILICUM SINICARUM

IS RESPECTFULLY DEDICATED

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PLATE 51

OLEANDRA WALLICHII (Hooker) Presl

POLYPODIACEAE

OLEANDRA WALLICHII (Hooker) Presl, Tent. Pterid. 78 (1836); Hk. et Bak. Syn. Fil. 303 (1868); C. Chr. Ind. Fil. 467 (1906).

Aspidium Wallichii Hooker, Exot. Fl. **1:** t. 5 (1823); Bedd. Ferns Brit. Ind. t. 265 (1868).

Neuronia asplenioides Don, Prod. Fl. Nepal. 6 (1825).

Oleandra Wallichii var. *lepidota* Christ, Bull. Acad. Géogr. Bot. (1906) 140.

Rhizome horizontally creeping, densely shaggy scaly; *scales* ferruginous, spreading, linear-subulate, fimbriate, dorsally affixed; stipe distant or approximate, 1.5-5, cm long, ferruginously hairy, jointed close to the base, so that the very short, lower articulation is quite concealed among the scales; *lamina* 15-30 cm long, 2-3.5 cm broad, apex suddenly and sharply acuminate; base subrounded or rotundo-cuneate, both edges parallel, somewhat wavy; *texture* papyraceo-herbaceous, midrib densely scaly beneath, rather densely hairy on veins on both sides and densely ciliate along the edges; *venation* distinct, veins patent, fine, closely parallel, generally forked from near, or above the base; *sori* rather irregularly uniseriate on each side, close and parallel to the midrib; *indusium* orbicular-reniform, hispidato-ciliate, attached by a deep sinus and opening outwardly.

Yunnan: Shweli-Salwin Divide, *G. Forrest 11799, 18581, 24738.* Szechuan occid. *E. H. Wilson 5246.* Tibet: Adung-seninghku junction, *Capt. Kingdon Ward* (1926).

Birma, Sikkim-Himalayas, Malyan Peninsula.

A well marked species of the genus, common in the Sikkim-Himalayas and the southwestern part of Yunnan. In habit, it resembles *O. Cumingii* J. Sm. from the Philippines and South China, which differs from the present species in rhizome scales being imbricatingly adpressed, usually much higher articulation of the stipe and leaf-margin not densely ciliate.

Plate 51. Fig. 1. habit sketch (natural size). 2. portion of a lamina, showing venation and position of sori (× 2). 3. hairs from lamina (× 50). 4. scales from rhizome (× 50).

第 五 十 一 圖

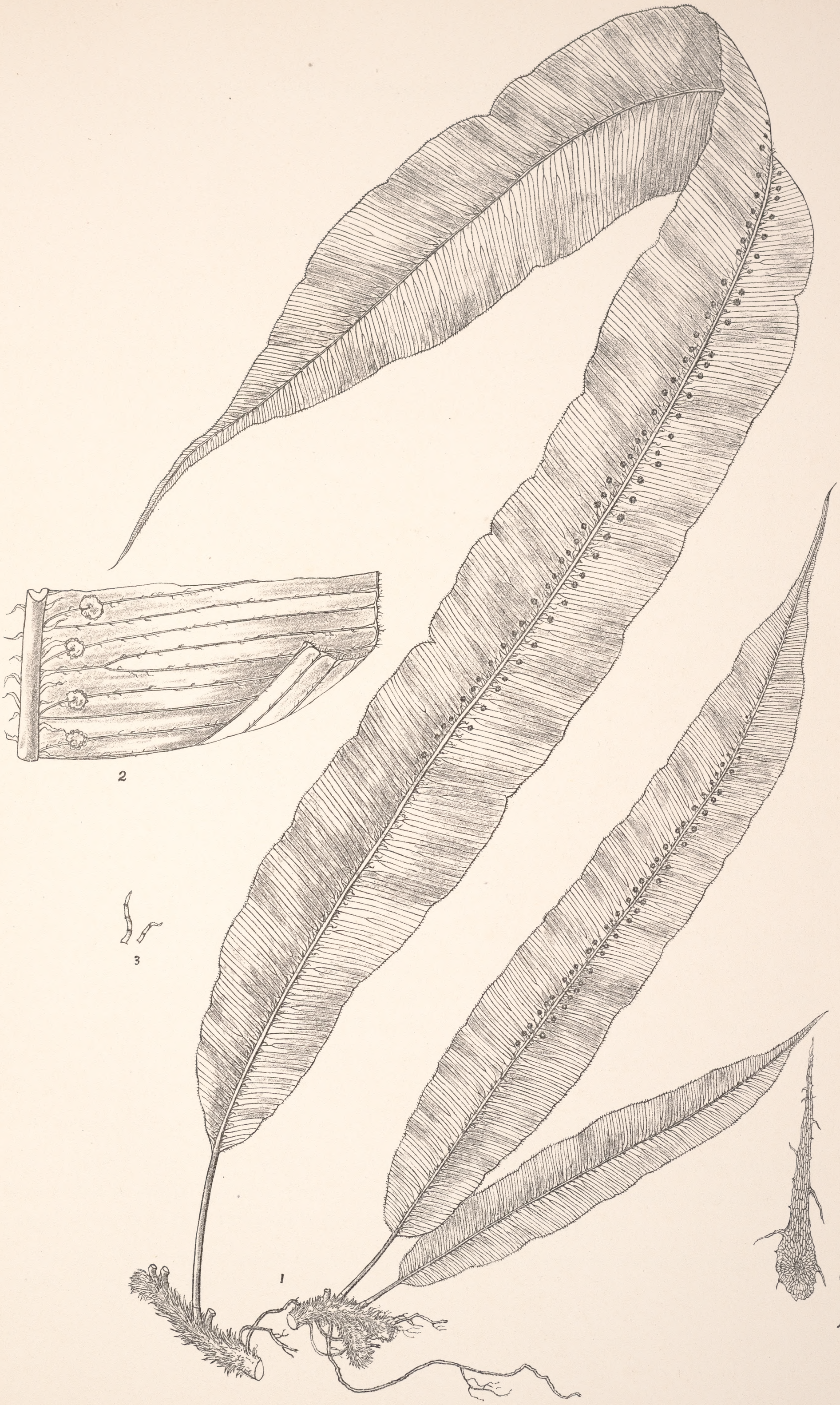
高 山 蓧 蕨（水 龍 骨 科）

OLEANDRA WALLICHII (Hooker) Presl

地下莖廣匍匐於岩石上；鱗片緊密，黃色，開張，狹披針形，邊緣具葺毛，腹部着生。葉疏生或頗密生，葉柄長僅一·五至五粉，被長毛，近基部有明顯之骨節，由此脫落後，留一短柄於莖上，幾爲鱗片所掩。葉體長十五至三十粉，寬二至三·五粉，葉端急漸尖頭，基部亞圓或短楔形，兩邊平行，略呈波狀，薄紙質，中肋下面鱗片頗密；葉脈明顯，兩面均具短毛；子囊羣位於中肋兩邊，爲不規則之一列；子囊羣蓋圓腎形，膜質，被剛毛，以缺刻着生於葉脈。

分布：雲南，四川，西藏，印度，緬甸及馬萊半島。

圖註： 1. 本種全形（自然大）， 2. 葉體之一部，表明葉脈及子囊羣之位置（放大二倍）， 3. 葉面上之毛（放大五十倍）， 4. 莖上之鱗片（放大五十倍）。



OLEANDRA WALLICHII (Hooker) Presl

高　山　蓧　蕨

C. R. Feng Del. et Lith.

PLATE 52

WOODWARDIA HARLANDII Hooker

POLYPODIACEAE

WOODWARDIA HARLANDII Hooker, Fil. Fxot. t. 7 (1857); C. Chr. Ind, Fil. 658 (1906); Nakai, Tokio Bot. Mag. **39:**102 (1925); Ching, Bull. Fan Mem. Inst. Biol. **1:** 148 (1930); ibid. **2:** 2 (1931); Wu, Polyp. Yaoshan. in Bull. Dept. Biol. Sun Yatsen Univ. n. **3:** 280 t. 95 (1932); Ogata, Ic. Fil. Jap. **5:** t. 250 (1933).

Lorinseria Harlandii J. Sm. Hist. Fil. 311 (1675).
Woodwardia Kempii Cop. Phil. Journ. Sci. Bot. **3:** 280 (1908).

Rhizome wide-creeping, hypogaeous, thick; scales broadly lanceolate, acuminate, brown, entire; *frond* uniform or subdimorphous, far apart, stipe variable in length, in fertile frond about 40 cm long, in sterile frond about half as long, straminous, naked or sparingly scaly below; lamina variable, from simple to trifid or regularly pinnate, or even irregularly bipinnatifid (*W. Kempii*), in pinnate forms ovate-detoid, rounded at base, about 30 cm long, 20 cm broad, pinnae 2-3 on each side, more or less connected by a narrow wing along rachis, linear-lanceolate, acuminate, about 20 cm long, 2-3 cm broad, the terminal segment much the longest, margin sinuate, rather irregularly serrulate; *texture* subcoriaceous; *veins* quite visible in young state but obscure in fully grown leaves, regularly anastomosing in 3 rows of elongate, oblique, large, subhexagonal areolae; *sori* linear-oblong, rather short, in pairs, close to the midrib, *indusium* membranaceous, vaulted, opening towards midrib.

Hongkong. *Dr. Harland* (type); *Lorraine;* Victoria Peak, *C. Wilford 15; Matthew 359, 360, 361* (1904). Kwangtung: Tai-mo Shan, *Bodinier 1191;* Loh-fau Shan, *C. Ford* (1883); Swatow, Thai-yong, *Dr. Dalziel,* July, 1901; Lockchong, *N. K. Chun, 42688;* Yao Shan, *S. P. Ko 51973.* Kwangsi: Yao Shan, Pe-niu, *S. S. Sin & K. K. Wang 177* (1928). Hainan: Ng Chi Leng, Fan-yah, *C. L. Tso & N. K. Chun 44180,* Oct. 26, 1932, in forest ravine.

Also Formosa and Tonkin.

An unique species of the genus, differing from all other known Asiatic species in simple or trifid or simple pinnate frond, with 2-3 pairs of linear-lanceolate, long segments. *W. Kempii* Cop. is only a form with pinnae being more or less lobed.

Plate 52. Fig. 1. habit sketch (natural size). 2. section of a fertile pinna, showing venation and position of sori (×3). 3. scales from rhizome (×50).

第 五 十 二 圖

哈 氏 狗 脊（水 龍 骨 科）

WOODWARDIA HARLANDII Hooker

地下莖肥大，橫生於土中；鱗片疏生，寬披針形，銹黃色，全緣，葉爲一形或稍爲二形，葉間距離大，柄長短不一，其在著生子囊羣之葉者，長可四十粉以上，其在不生子囊羣之葉者，長約半之，稻桿色，光滑，或下部鱗片疏生，葉體不一其形：或爲披針形之單葉，或爲三裂，或爲羽狀分裂，甚至爲不完全的二次羽狀分裂；其在羽狀分裂者，小葉一至三對，長約二十粉，寬約二至三粉，基部爲具翅之中肋連着，頂部之小葉尤長；亞革質，邊緣具小鋸齒，葉脈不甚顯明，於主脈之兩旁成三列之斜長六角形網眼，近邊緣分開；子囊羣形長，生於主脈之兩側，具膜質全緣之蓋向主脈開離。

分布： 香港，廣東，瓊洲島，廣西，近發現於台灣及東京。

本種爲本屬特殊之一種，其異於其他產於亞洲之種者，爲其全形或三裂或僅一位羽狀分裂之葉體。W. Kempii Cop. 者僅爲本種之變形，以其兩側小葉有再行羽狀分裂之傾向也。

圖註： 1. 本種全形 （自然大）， 2. 子囊羣葉體 之一部，表示其葉脈 及子 囊羣之位置（放大三倍）， 3. 莖上之鱗片（放大五十倍）。

WOODWARDIA HARLANDII Hooker

哈　氏　狗　脊

C. R. Feng Del. et Lith.

PLATE 53

ASPLENIUM ADNATUM Copeland

POLYPODIACEAE

ASPLENIUM ADNATUM Copeland, Phil. Journ. Sci. Bot. **3:** 284 (1909); C. Chr. Ind. Fil. Suppl. 10 (1906-12).

Rhizome suberect, 5 mm thick, densely scaly; *scales* 5 mm long, linear-lanceolate, entire, blackish; *fronds* caespitose, several together, stipe 10-15 cm long, obscurely blackish, densely clothed in similar but smaller and subdeciduous scales; lamina 15-20 cm long, about 3 cm broad, linear-lanceolate, simple pinnate below pinnatifid apex, rachis green, unisulcate above, sparcely scaly beneath; *pinnae* broadly adnate, the basal ones somewhat shortened, rachis wingless, those above the middle are connected by a narrow wing along the rachis, oblong, subacute, patent, margin obscurely dentate above the entire, constricted base, glabrous above, fibrillose beneath; *texture* subcoriaceous, color pale green; *veins* subflabellate, inconspicuous but caniculate, extending well into the teeth; *sori* 3-5 to each pinna, linear, oblique, about 5 mm long, *indusium* linear, broad, entire.

Kwangtung: Tai-mo Shan, opposite Hongkong, *C. G. Matthew* (type), November 7, 1907.

An unique species, characterized by narrowly lanceolate, simple pinnate leaves with short, adnate pinnae and dense, black, fibrillose scales on the stipe and rachis beneath. However, it may possibly prove to be a young form of the variable *Asplenium crinicaule* Hance, common in the locality.

Plate 53. Fig. 1. habit sketch (natural size). 2. pinna, showing venation and position of sori (×4). 3. scales from the base of stipe (×50). 4. scales from rachis (×50).

第 五 十 三 圖

合 生 鉄 角 蕨（水龍骨科）

ASPLENIUM ADNATUM Copeland

地下莖短肥，斜生；鱗片密生，長約五糎，狹披針形，全緣，黝色，葉簇生，柄長十至十五粉，黝色，鱗片密生，久則脫落，葉體長十五至二十粉，寬約三粉，線披針形，一回羽狀深裂，中肋綠色，上面鱗片疏生，小葉無柄，但合生於中肋，長橢圓形，開張，邊緣具鈍鋸齒，上面光滑，下面具針形鱗片，亞革質，淡綠色，葉脈分開，不顯明；子囊羣每小葉三至五個，斜出，長約五糎，蓋線形，全緣。

分布： 廣東之天馬山。

本種爲特殊之種，其一回羽狀分裂之線披針形之葉，與合生之小葉，易與他種分別。

圖註： 1. 本種全形（自然大）， 2. 小葉，表明其葉脈及子囊羣（放大四倍）， 3. 葉柄基部之鱗片（放大五十倍）， 4. 莖上之鱗片（放大五十倍）。

ASPLENIUM ADNATUM Copeland

合 生 鐵 角 蕨

C. R. Feng Del. et Lith.

PLATE 54

TAENITIS BLECHNOIDES (Willdenow) Swartz

POLYPODIACEAE

TAENITIS BLECHNOIDES (Willdenow) Swartz, Syn. Fil. 24, 220 (1806); Hk. et Bak. Syn. Fil. 397 (1868); Christ, Farnkr. d. Erde 130 (1897); Diels, Nat. Pfl. Fam. **I:** 4. 305 (1899); C. Chr. Ind. Fil. 630 (1906).

Pteris blechnoides Willd. Phytographia 13 t. 9, f. 3 (1794).

Taenitis chinensis Desv. Berl. Mag. **5:** 308 (1811).

Rhizome thick, creeping, densely beset with atropurple, spreading, stout, setose *hairs*, which extend upward to some distance above the base of stipe; *frond* distant, large, stipe 26-50 cm long, firm, naked, glossy, straminous, continuous to the rhizome, lamina as long as the stipe, oblong-ovate, impari-pinnate, *pinnae* 2-7-jugate, lanceolate, acuminate, margin entire, more or less wavy, cartilaginous, 15-25 cm long, 1.5-2 cm broad, oblique, lower ones subopposite, not shortened, generally broader and sterile, the upper ones subalternate, fertile, the terminal one as large as the lateral ones, shortly petiolate, naked in all parts; *texture* subcoriaceous, color lustrous green above; *veins* reticulated in 2-3 rows of oblong, oblique, hexagonal areolae without including veinlets; *sori* linear, continuous or rarely interrupted, transversing the reticulated veins between the margin and costa, or often nearer to the margin; *paraphyses* dense, atropurple, clavate, multi-septate and higher than sporangia.

Hainan: On the way from Dung Ka to Win Fa Shi, *C. L. Tso & N. K. Chun 43462, 43708,* August 15, 1932; Mo Shan, *C. L. Tso & N. K. Chun 52278,* April 30, 1932; on wet rocks under woods.

Malesia, Polynesia, Ceylon, and Indo-China.

This interesting fern, though seems to be common in other parts of tropical Asia, is known for the first time in the island Hainan, the range of distribution being thus extended farther north. According to Copeland, the affinity of this fern to *Syngramma* and *Schizoloma* is unusually clear, though both von Goebel and Bower have regarded it as one of the "genera incertae sedis."

Plate 54. Fig. 1. habit sketch (natural size). 2. a section of pinna, showing venation and position of sori (× 2). 3. paraphsis from a sorus (× 50). 4. spore (× 150). 5. setose hair from the base of stipe (× 50).

第 五 十 四 圖

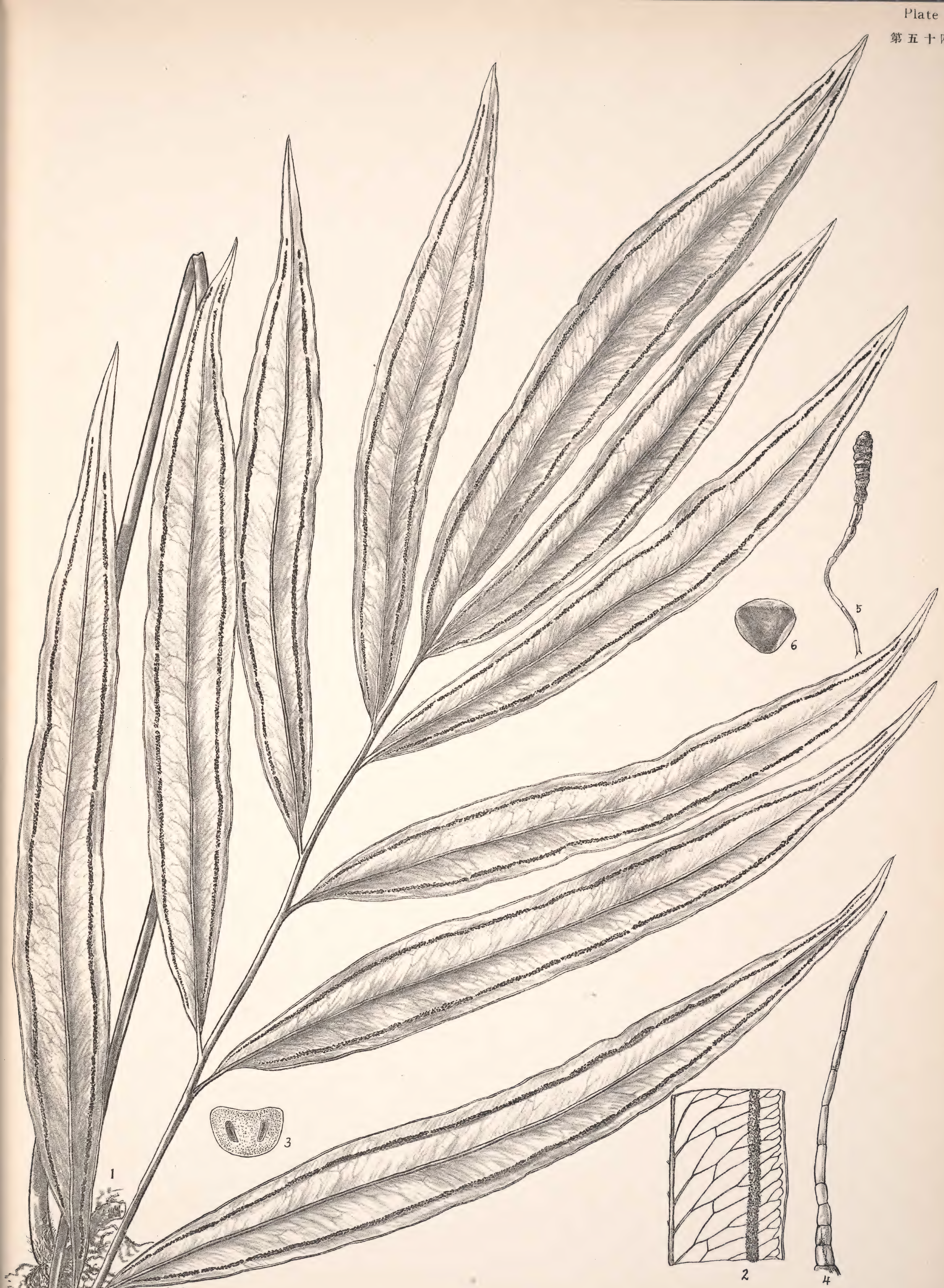
竹 葉 蕨 (水龍骨科)

TAENITIS BLECHNOIDES (Willd.) Swartz

地下莖橫生於土中，被紅櫻色之開張針狀粗毛；葉疏生，柄長二六至五十粉，稻桿色，光滑，僅基部具同樣之紅櫻毛。葉體略與柄等長或過之，一回單數羽狀分裂；小葉長披針形，二至七對或較多，下者亞對生，上者亞互生，具短柄，形體略等，漸尖頭，基部楔形，亞革質，深綠色，上面光澤，全緣，具角質透明之狹平邊，葉脈網狀，網眼大，斜長方形，中無小脈；子囊羣無蓋，線形，一列，位於中肋及葉邊之間，或稍貼近葉邊，惟具無數深紅櫻色錘形之線狀體。

分布： 亞洲熱帶各地；最近發現於瓊洲島。

圖註： **1.**本種全形(自然大)， **2.** 小葉一部，表示葉脈及子囊羣之位置(放大二倍)， **3.** 莖之基部橫切面， **4.** 莖上之毛(放大五十倍)。 **5.** 子囊羣內之線狀體(放大五十倍)， **6.** 胞子(放大一百五十倍)。



TAENITIS BLECHNOIDES (Willd.) Swartz

竹　葉　蕨

C. R. Feng Del. et Lith.

PLATE 55

PTERIS INSIGNIS Mettenius

POLYPODIACEAE

PTERIS INSIGNIS Mettenius; Kuhn, Journ. Bot. (1868) 269; C. Chr. Ind. Fil. 599 (1906).

Rhizome oblique, thick, woody, blackish, clothed in ferruginous, subulate *scales; frond* solitary, uniform, stipe 40-60 cm long, rather thick near the base, terete, narrowly sulcate above, straminous, naked, lamina 45-80 cm long, 20-30 cm broad at base, ovate or ovate-oblong, pinnate, *pinnae* 6-13 pairs, petiolate (petioles in lower pinnae 1.2 cm long), to 20 cm long, 2-2.6 cm broad, the uppermost ones generally smaller and also free, similar to the lower ones, margin very entire throughout, cartilaginous; *texture* thickly chartaceous, naked; *venation* distinct, lateral veins patent, forked; *sori* narrow, confined to the upper half of the margin, leaving a considerable portion of the entire apex sterile, *indusium* narrow, gray, entire.

Hongkong: *Hance 187* (type). Kwangtung: Tai-mo Shan, *C. G. Matthew*, Nov. 7, 1907; Swatow, Thai-yong, *Dr. Dalziel*, July, 1901; Yingtak, *C. L. Tso 21980;* Lockchong, *C. L. Tso 7559; N. K. Chun 41995, 42877;* Kochow, *Y. Tsiang 20782;* Lung-tau Shan. *Y. K. Wang 31645, 31545.* Kweichow: Chen-feng, *Y. Tsiang 4346;* Pin-fa, *Cavalerie 3394.* Kwangsi: Yao Shan, *S.S.Sin & K. K. Wang 183B,* in bamboo grove; San-fang, Lu-chen, *R. C. Ching 6239;* Lin Yin, *R. C. Ching 7037.* Kiangsi: Tsoongjen, Lepeichaio, *Y. Tsiang 10244* (1932). Fukien: Amoy, *Swinhoe* (1870). Yunnan: The Red River, *Hancock 179*

One of the most distinct of the group of *Pteris cretica* L. from which it differs in decidedly larger size, simple basal pinnae, the lower few pairs of pinnae remaining sterile, and in the very entire margin throughout. Our plate represents a rather small form.

Plate 55. Fig. 1. habit sketch (natural size). 2. portion of a fertile pinna (×3).

第 五 十 五 圖

全緣鳳尾蕨(水龍骨科)

PTERIS INSIGNIS Mettenius

地下莖粗短，木質，斜生，具黃褐色狹披針形之鱗片；葉單生，柄長四十至六十粉，粗健，稻桿色，光澤。葉體長四五至八十粉，寬二十至三十粉，卵橢圓形，一回單數羽狀分裂，小葉六至十二對，具柄，線披針形，全緣，頂生小葉具柄，形體同於側生小葉，厚紙質，光滑，綠色，葉脈顯明，開張，分叉，子囊羣緣邊着生，蓋膜質，灰白色，全緣。

分布： 香港，廣東，貴州，廣西，江西，福建，雲南。

本種爲特殊之種，形似鳳尾蕨 (Pteris cretica L.) 然較大，基部一對小葉不分叉，葉邊全緣，故易於識別。

圖註： 1. 本種全形(自然大)， 2.子囊羣葉之一部(放大三倍)。

PTERIS INSIGNIS Mettenius

全緣鳳尾蕨

C. R. Feng Del. et Lith.

PLATE 56

ADIANTUM FABERI Baker

POLYPODIACEAE

ADIANTUM FABERI Baker, Journ. Bot. (1888) 225; Diels, Nat. Pfl. Fam. **1:** 4. 284 (1899); C. Chr. Ind. Fil. 26 (1905).

Rhizome short, oblique, densely clothed at the base of stipe in linear-acuminate, dark chestnut-brown, lustrous, subentire, spreading *scales; fronds* caespitose, stipe wiry, naked, shining, castaneous, 10-15 cm long; *lamina* ovate-oblong, tripinnate, 12-15 cm long, 5-8 cm broad, firm, green, glabrous, lower *pinnae* ovate-oblong or deltoid, petiolate, ultimate pinnules orbicular, petiolulate, 0.3-0.7 cm broad, sometimes obscurely crenate on the upper margin of the sterile ones; *veins* distinct, free, flabellately branched, falling short from the narrowly cartilaginous margin; *sori* 1-2, or rarely 3, to each ultimate pinnule, small, globose, deeply indented on the upper margin, *indusium* orbicular, black, much smaller than that in *A. monochlamys* and curled-up at last.

Szechuan: Mt. Omei, *E. Faber 1033* (1887), 3,000 ft. alt.

A rare fern, being collected only once in the locality. It is a close ally to *A. Roborowskii* Maxim. from Kansu, differs chiefly in much broader frond, larger orbicular ultimate pinnules each generally with 1-2 smaller sori and smaller black indusia.

Plate 56. Fig. 1. habit sketch (natural size). 2. ultimate pinnule, showing venation and sori (×8). 3. scales from rhizome (×50).

第 五 十 六 圖

峨 嵋 鐵 線 蕨 (水 龍 骨 科)

ADIANTUM FABERI Baker

地下莖短，斜生，葉簇生，葉柄細長，栗褐色，光澤，基部具褐色硬鱗片；葉體卵橢圓形，三回分裂，長一二至一五粉，厚紙質，光滑，一次基部小葉卵形，具柄，末次小葉圓倒卵形，具柄，長寬三至七糎，非子囊羣小葉，頂邊略呈波狀，葉脈顯明，扇形分叉，不達葉邊。子囊羣一至二個或三個，不大，圓形，蓋同形，黑色，質堅，生於深圓缺刻內。

分布： 四川峨嵋山。

本種爲稀見之種，僅採得一次；其形體極似甘肅產之Adiantum Roborowskii Maxim.所不同者，爲其較大之倒卵圓形末回小葉，各具一至二個子囊羣及黑色角質之蓋。

圖註： 1. 本種全形(自然大)， 2. 末回小葉，表明葉脈及子囊羣（放大八倍）， 3. 莖上之鱗片（放大五十倍）。

2

3

1

ADIANTUM FABERI Baker

峨 嵋 鐵 線 蕨

C. R. Feng Del. et Lith.

PLATE 57

LEPISORUS LEWISII (Baker) Ching

POLYPODIACEAE

LEPISORUS LEWISII (Baker) Ching, Bull. Fan Mem. Inst. Biol. **4:** 65 (1933).

Polypodium Lewisii Baker, Journ. Bot. (1875) 201; C. Chr. Ind. Fil. 529 (1906); Takeda, Notes, R. Bot. Gard. Edinb. **8:** 275 (1915).

Rhizome rather thick, creeping, epigaeous, densely scaly; *scales* atratous, rigid, lanceolate-subulate from an ovate base, margin slightly erosed, luminae opaque, very narrow with thick walls, dark-colored, except the narrow margin, which is hyaline with clear elongate meshes; *frond* approximate, 6-9 cm long, or rarely longer, about 1.5 mm broad, rigid, linear, with strongly revoluted margin throughout the entire length of the lamina; *texture* rigid, color pale green; *sori* oblong-ovate, confined to the upper part, wholely or partly covered by the revoluted leaf-margin, which appears bead-like, due to the expanding sori.

Kiangsi: Lu-Shan, *Dr. Shearer* (type), 1873. Chekiang: Sia-kan, Fan-chiao, *R. C. Ching 3684*, October, 1927. Anwhei: Whang Shan, *K. K. Tsoong 3172*. Kwangsi: San-feng, Chu-feng Shan, *R.C. Ching 5926* (1928). Kwangtung: Lung-tau Shan, Kook Kiang, *C. Wang 31652*, Dec. 19, 1931.

A peculiarly interesting little rock-dwelling fern with short, narrowly linear and strongly revoluted leaves, which appear bead-like due to the more or less concealed but expanding sori. All the specimens cited above are very uniform in all respects. It is found inhabiting the moss-clad cliffs in deep ravines or under dense forests, and proves to be the smallest known species of the genus.

Plate 57. Fig. 1. habit sketch (natural size). 2. peltate paraphysis from a sorus (x 50). 3. scale from rhizome (x 50).

第 五 十 七 圖

廬 山 瓦 葦（水 龍 骨 科）

LEPISORUS LEWISII (Baker) Ching

地下莖頗肥，橫生；鱗片密生，色黑，質厚，形體及組織，一如瓦葦；葉頗密生，長六至九吋，鮮有過此者，寬約一·五糎，線形，邊緣強度反捲及於中肋，呈念珠狀，堅革質，淡綠色；子囊羣橢圓形，生於葉之上半部，幼時全爲葉邊所掩，終則半露於外。

分布： 江西廬山，浙江，安徽黃山，廣西北部，廣東北部。

本種爲本屬最小之種，其葉反捲達於中肋，呈念珠狀，故易與他種識別；本種常生於蘚苔生之陰濕岩石上。

圖註： 1. 本種全形（自然大）， 2. 着生於子囊羣上之楯形鱗片（放大五十倍）， 3. 莖上之鱗片（放大五十倍）。

LEPISORUS LEWISII (Baker) Ching
廬山瓦葦

C. R. Feng Del. et Lith.

PLATE 58

LEPISORUS EILOPHYLLUS (Diels) Ching

POLYPODIACEAE

LEPISORUS EILOPHYLLUS (Diels) Ching, Bull. Fan Mem. Inst. Biol. **4:** 65 (1933).

Polypodium eilophyllum Diels in Engl. Jahrb. **29:** 204 (1901); C. Chr. Ind. Fil. 524 (1906); Acta Horti Gotob. **1:** 100 (1924); Dansk Bot. Archiv. **6:** 53 pl. VII. f. 3 (1929).

Polypodium involutum Baker (non Desv. 1811, nec Mett. 1856), Journ. Bot. (1889) 177; Diels. Nat. Pfl. Fam. **1:** 4.315 (1899).

Polypodium Lewisii Christ (non Baker, 1875), Nuovo Giron. Bot. Soc. Ital. n. s. **4:** 97 pl. 1. f. 1 (1807).

Rhizome thick, creeping, densely scaly; *scales* shaggy, ovate-acuminate, denticulate, fuscous, concolorous, finely clathrate with medium-sized but clear, uniform luminæ; *frond* rather approximate, narrowly linear-elongate, margin strongly revoluted, 25-35 cm long, about 5 mm broad, gradually decurrent to the base; *texture* rigidly coriaceous, color greenish, sparcely scaly beneath; *sori* ovate, closely packed between the midrib and the revoluted margin, which completely conceals the sori, when young, and becomes somewhat dilated due to the expanding sori.

Hupeh: Ichang, *A. Henry 6859* (type); *E. H. Wilson 2636.* Szechuan: Tchen-kou-tin, *R. Farges;* Lower Tebbu Country, *J. F. Rock 14810,* Sept, 2, 1926; Luting Hsien, *W. P. Fang 3734* (1928); Tatsienlu, *Soulié 23;* Moupin, *David,* April, 1869. Yunnan: Mengtze, *A. Henry 9194B.* Shensi: Thæ-pei Shan, *Giraldi,* August, 1896; ibid., *Giraldi,* Sept. 1897; *Purdom 90* (1910).

One of the most distinct fern of the genus *Lepisorus,* being unlike any other known species, except *L. Lewisii* (Baker), which is also provided with narrowly linear fronds with strongly revoluted margin and more or less concealed sori, but differs in decidedly smaller size, and entirely different type of scales on the rhizome.

Plate 58. Fig. 1. habit sketch (natural size). 2. section of a lamina, showing venation and position of sori (×7). 3a-b. peltate paraphyses from a sorus (×50). 4. scale from rhizome (×50). 5. scale from underside of a lamina (×50).

第 五 十 八 圖

高 山 瓦 葦 (水 龍 骨 科)

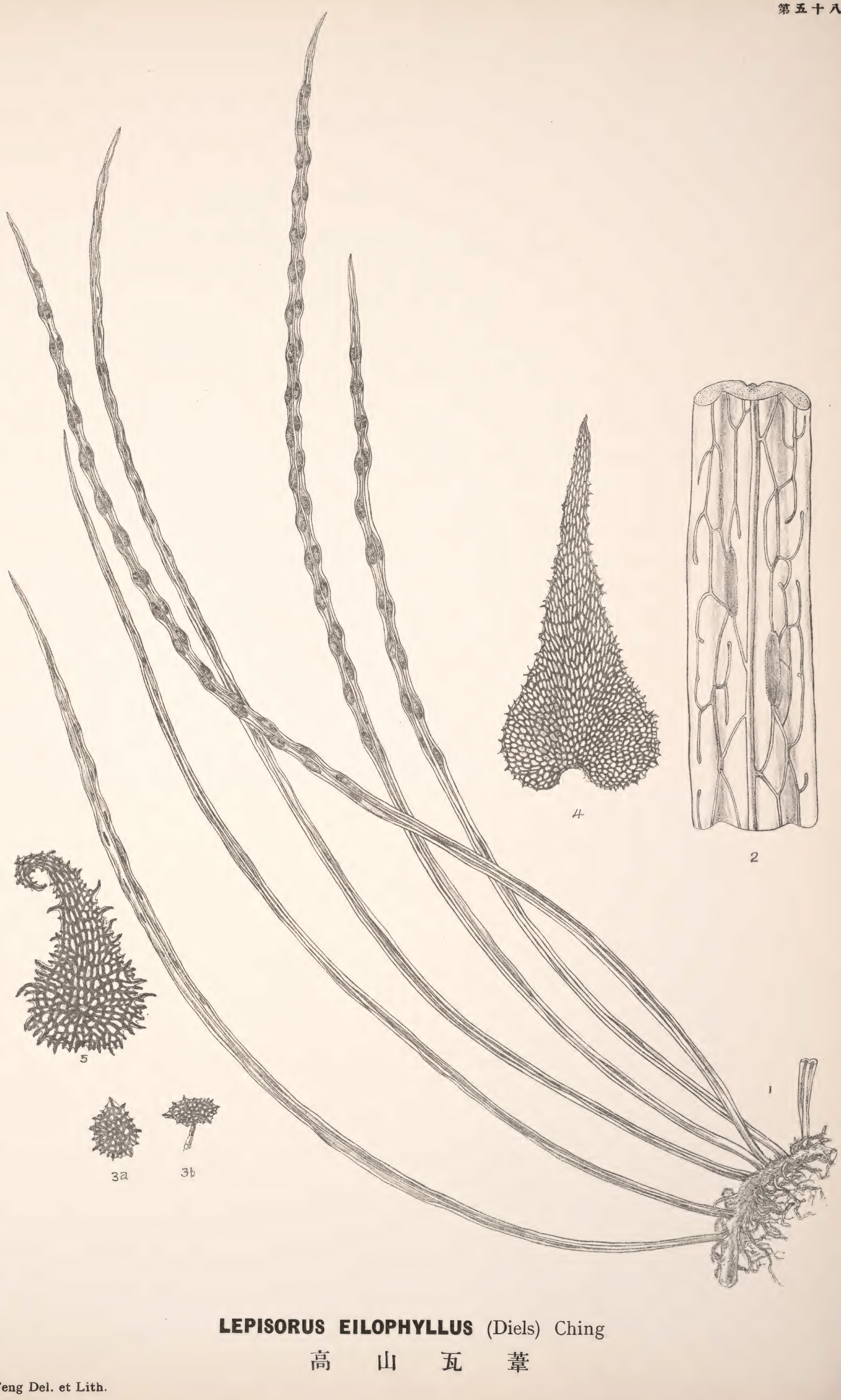
LEPISORUS EILOPHYLLUS (Diels) Ching

地下莖橫生，頗肥；鱗片密生，卵形，漸尖頭，開張，具小齒，色黑，質薄，網眼頗大而透明；葉頗密生，狹線披針形，葉邊強度反捲，幾達中肋，長二五至三五粉，寬約五糎，向基部漸狹，幾無柄，厚革質，淡綠色，下面幼時稍被鱗片；子囊羣卵形，緊位於中肋與反捲葉邊之間，常半爲後者所掩。

分布： 湖北宜昌，甘肅南部，雲南，四川，陝西及川邊。

本種與廬山瓦葦 (Lepisorus Lewisii) 同爲本屬特殊之種，因其狹線形之長葉具強度反捲之邊，常蔽覆卵形之子囊羣也。

圖註： 1. 本種全形(自然大)， 2. 葉體之一部，表示葉脈及子囊羣之位置（放大七倍）， 3 a-b. 着生於子囊羣上之楯狀鱗片(放大五十倍)， 4. 莖上之鱗片(放大五十倍)， 5. 葉體下面之鱗片(放大五十倍)。



LEPISORUS EILOPHYLLUS (Diels) Ching

高　山　瓦　葦

C. R. Feng Del. et Lith.

PLATE 59

LEPISORUS SUBLINEARIS (Baker) Ching

POLYPODIACEAE

LEPISORUS SUBLINEARIS (Baker) Ching, Bull. Fan Mem. Inst. Biol. **4:** 78 (1933).

Polypodium sublineare Baker; Takeda, Notes, R. Bot. Gard. Edinb. **8:** 276 (1915); C. Chr. Ind. Fil. Suppl. 28 (1913-16); Hand-Mzt. Symb. Sinic. **6:** 43 (1929); C. Chr. Contr. U. S. Nat. Herb. **26:** 320 pl. 22 (1931).

Rhizome rather thick, creeping, hypogæous, densely scaly; *scales* ovate-acuminate, fuscous, coarsely clathrate with large, clear, almost isodiametrical luminæ, concolorous, margin with short, stout, protruding teeth; *frond* rather approximate, 25-35 cm long, 2-2.5 cm broad, broadly lanceolate, broadest at the lower one-third, attenuate to a short stipe, margin plane; *texture* thick chartaceous, or subcoriaceous, color brown; *venation* obscure; *sori* medium-sized, rounded, medial, extending halfway downward.

Yunnan: Tengchwan Lin Mt., *A. Henry 9062A* (type); Mengtze, *Henry 11827, 11827A, 11827B, 11828; Hancock 83;* Mekong, *Gebauer;* Yuangchang, *Henry 13603.* Szechuan: Moupin, *David* (1870).

Burma: Between Sadon and Yunnan border, *J. F. Rock 7424, 7507.*

A large fern in the genus *Lepisorus*, and a close ally to *L. loriformis* (Wall.) in scale-character, differs in stipitate leaves and rounded medial sori.

Plate 59. Fig. 1. habit sketch (natural size). 2. peltate paraphysis from a sorus (×50). 3. scale from rhizome (×50).

第 五 十 九 圖

瀘瓦葦（水龍骨科）

LEPISORUS SUBLINEARIS (Baker) Ching

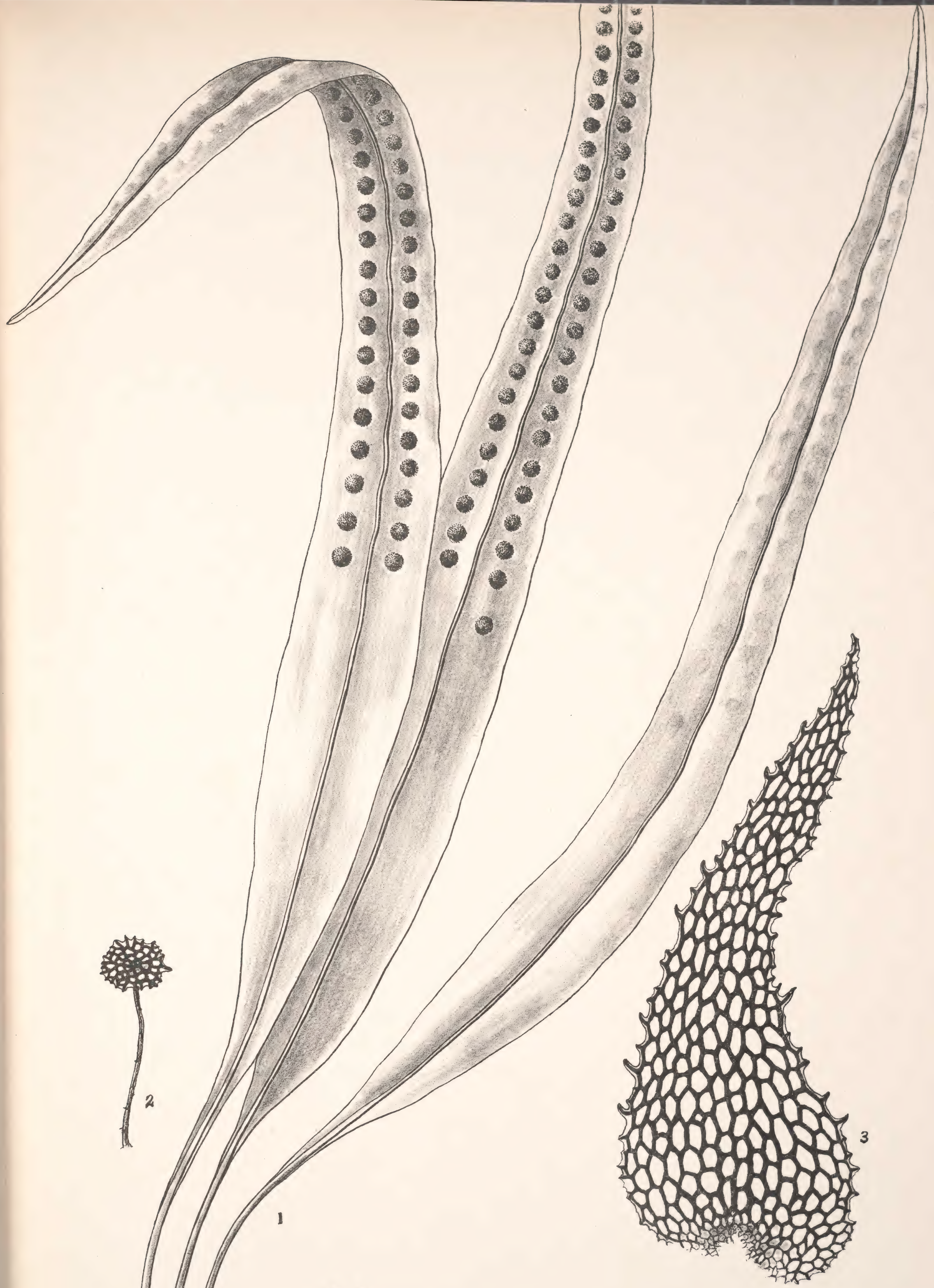
地下莖頗肥，着土橫生；鱗片密生，卵形，漸尖頭，色黑，質薄，網眼大而透明，等形，邊緣具粗鋸齒；葉頗密生，長二五至三五粉，寬二至二·五粉，闊披針形，下部三分之一處最寬，柄短，葉邊平，厚紙質或亞革質，黃色，葉脈隱約；子囊羣中大，形圓，位於葉邊與中肋之間。

分布： 雲南，緬甸。

本種爲本屬之一大種，其莖上鱗片之組織，一如帶瓦葦，然其葉不爲細長線披針形，基部具較長之柄，子囊羣圓形，位於葉邊與中肋之間，故易於識別。

圖註： 1. 本種全形（自然大）， 2. 着生於子囊羣上之楯形鱗片（放大五十倍）， 3. 莖上之鱗片(放大五十倍)。

Plate 59
第五十九圖



C. R. Feng Del. et Lith.

LEPISORUS SUBLINEARIS (Baker) Ching

瀘瓦葦

PLATE 60

LEPISORUS PSEUDONUDUS Ching

POLYPODIACEAE

LEPISORUS PSEUDONUDUS Ching, Bull. Fan Mem. Inst. Biol. **4:** 83 (1933).

Rhizome wide-creeping, densely scaly; *scales* ovate-lanceolate, acuminate with rounded base, margin with protruding teeth, concolorous, fuscous, clathrate with large, clear, rather uniform luminae; *frond* about 1 cm apart, 20-25 cm long, about 1.5 cm broad, elongate-oblanceolate, gradually attenuate to a short but distinct stipe, apex caudato-acuminate, quite glabrous on both sides; *texture* subcoriaceous: *venation* completely hidden; *sori* medium-sized, rounded, medial, extending halfway downward.

Szechuan austro-occid: Kan-yeon Hsien, *W. P. Fang 6875* (type), on rock, 3,000 ft. alt., Oct. 12, 1030, common; O-shan, *W. P. Fang 6742;* Dongrergo, *H. Smith 3667* (in Herb. C. Chr.); Mt. Omei, *W. P. Fang 2984, 2995,* August 15, 1928; Ma-pien Hsien, *W. P. Fang 470, 1571* (f. major); ibid., *W. P. Fang 1586;* Hon-ya Hsien, *W. P. Fang 8058* (f. reducta). Yunnan: Mengtze, *W. Hancock 104;* Lickiang Snow Range, *J. F. Rock 5400;* Lickiang, *J. F. Rock 3387* (f. parva), *5400,* May 30-June 6, 1922.

Burma: Between Sadon and the Yunnan border, *J. F. Rock 7498.*

A well marked fern, somewhat resembles *L. nudus* (Hooker) in general habit, differs, above all, in dense, spread, fuscous, lanceolate, long-acuminate scales with dentate margin, clear, quite uniform luminæ, and in rather suddenly caudato-acuminate leaf-apex; from *L. loriformis* (Wall.) it differs in oblanceolate, stipitate leaves with suddenly caudato-acuminate apices and rounded medial sori.

This is a common fern in the mountains in western Szechuan and Yunnan and generally considered by previous authors as *Polypodium lineare* Thbg., or some other closely related species.

Plate 60. Fig. 1. habit sketch (natural size). 2. paraphysis from a sori (×50). 3. scale from rhizome (×50).

第 六 十 圖

長 瓦 葦 (水 龍 骨 科)

LEPISORUS PSEUDONUDUS Ching

地下莖蔓生；鱗片密生，卵狀披針形，漸尖頭，基部圓形，邊緣具齒，色黑，網眼大而透明，一色，等形；葉間距離約一粉，體長二十至二五粉，寬一·五粉，長倒披針形，柄短，向葉端急尖，兩面光滑，亞革質，葉脈不顯，子囊羣中大，圓形，遠離，位於葉邊與中肋之間。

分布： 四川西部高山，雲南，緬甸。

本種爲本屬頗爲特殊之一種，形體略似光瓦葦 (Lepisorus nudus)，然其莖上之鱗片則大異，且葉端爲急尖頭，故易於識別；與本種更爲類似者，爲帶瓦葦，然其葉爲倒披針形，具較長之柄，葉端爲急尖頭，故亦易於識別。

圖註： 1. 本種全形 (自然大)， 2. 着生於子囊羣上之楯形鱗片(放大五十倍)， 3. 莖上之鱗片(放大五十倍)。

LEPISORUS PSEUDONUDUS Ching

長　瓦　葦

C. R. Feng Del. et Lith.

PLATE 61

LEPISORUS LORIFORMIS (Wall.) Ching

POLYPODIACEAE

LEPISORUS LORIFORMIS (Wall.) Ching, Bull. Fan Mem. Inst. Biol. **4:** 81. 1933.

Polypodium loriforme Wall. Cat. n. 271. 1828 (nom. nud.); Mett. Polyp. 92 (exel. t. I. f. 49-50). 1857; Hooker, Gard. Ferns pl. 14. 1862 (excl. syn.); C. Chr. Contr. U. S. Nat. Herb. **20:** 217, 1931.

Drynaria loriforma J. Sm. Journ. Bot. (1841) 61.

Polypodium xiphiopteris Baker, Kew Bull. (1906) 13.

Polypodium excavatum var. *loriforme* C. Chr. Ind. Fil. 541. 1906.

Polypodium subimmersum Baker, Kew Bull. (1895) 55; Takeda, Notes R. Bot. Gard. Edinb. **8:** 275. 1915.

Polypodium mengtzeanum Baker, Kew Bull. (1906) 14.

Polypodium lineare var. *loriforme* Takeda, Notes R. Bot. Gard. Edinb. **8:** 275. 1915; Acta Horti Goteb. **1:** 100. 1924.

Polypodium subimmersum f. *mengtzeana* Takeda, Notes R. Bot. Gard. Edinb. **8:** 276. 1915; Hand-Mzt, Symb. Sinic. **6:** 43. 1929.

Rhizome rather short-creeping, densely scaly, scales fuscous, ovate-acuminate, denticulate, coarsely clathrate with large clear uniform hexagonal luminae, concolorous; *frond* rather approximate, 30-45 cm long, 6-13 mm broad, linear-elongate, gradually attenuate to short stipe (1-3 cm long), with long-acuminate apex, margin entire or slightly repando-undulate, somewhat revoluted in dry state; *texture* subcoriaceous, color brown; *costa* prominent, *lateral veins* and *veinlets* completely immersed but transluscent under strong light; *sori* medium-sized, roundish, or more often oblong, submarginal, 1.2 cm apart, densely covered when young with rather small, irregularly stellato-peltate scales.

Yunnan: Mengtze, *A. Henry* 11827B (pro parte), 11926A; *Hancock* 92; Szemeo, *Henry* 1339, 13249, 9134; on route to Tengyueh, *J. F. Rock* 7020; Between Tengyueh and Burmese border, *J. F. Rock* 7303; Salween, *Gebauer*. Tibetan border: *Capt. Kingdon Ward* 591; July 28, 1910.

Upper Burma: *G. Forrest* 26131.

Type from Nepal (*Wallich* 271).

The fern before us proves to be one of the most distinct of the genus but, unfortunately, was entirely forgotten since the time of Hooker and Mettenius over half a century ago. It is almost inconceivable when the authors of Indian ferns, like C. B. Clarke, R. H. Beddome and J. G. Baker, should have entirely suppressed it as a synonym of *polypodium lineare* Thunberg. In 1915, H. Takeda took a sounder return of ideals of this fern by raising it to a varietal rank of Thunberg's species, but it is not until over two years ago that this fern, as a very distinct species, has happily been revived through the effort of Dr. C. Christensen, who having explicitely redescribed it concluded that it was sufficiently different from *Polypodium lineare* Thunberg, or other related species in general habit, position of sori and structure of scales on rhizome.

Plate 61. Fig. I. Habit sketch (natural size). 2. Peltate paraphysis from a sorus (x 50). 3. Scale from rhizome (x 50). 4. Sporangium (x 150). 5. Spores (x 150). 6. Portion of a frond, showing venation and position of sori (x 4).

第 六 十 一 圖

帶 瓦 葦（水 龍 骨 科）

LEPISORUS LORIFORMIS (Wall.) Ching

地下莖橫生，較短，鱗片密生，色黑，質薄，卵形漸尖頭，邊緣具齒，網眼大而明，等形，爲六角形，一色。葉間距離甚小，體長三〇至四五粉，寬六至一三糎，狹長，兩邊幾平行，兩端漸尖，基部具短柄，長一至三粉，全緣，乾則稍反捲呈波形，亞革質，色黃褐，中肋顯著，側脈及細脈不顯，僅於強光下陰約可見。子囊羣中大，通常爲橢圓形，貼近葉邊，羣間距離約一·二粉，幼時密覆不規則星芒形之楯狀小鱗。

分布： 印度北部，緬甸，中國雲南。

按本種爲瓦葦屬之最奇特之一種，惜自霍果爾氏及梅頓牛氏以來，幾無人能識之矣。凡治印度蕨類者，如克拉克，貝唐姆及倍柯諸氏，無一不以瓦葦之異名同物視之；直至前年，克利斯敦生氏始將其由瓦葦分出，另立一種，並詳爲記載，以示此種與瓦葦不同之點。

圖註： 1. 本種全形（自然大）. 2. 子囊群上楯鱗（放大五〇倍）. 3. 莖上鱗片（放大五〇倍）. 4. 子囊全形（放大一五〇倍）. 5. 胞子（放大一五〇倍）. 6. 葉體之一部，表示葉脈及子囊羣之位置（放大四倍）。

LEPISORUS LORIFORMIS (Wall.) Ching

帶　瓦　蕨

C. R. Feng Del. et Lith.

PLATE 62

LEPISORUS MACROSPHAERUS (Baker) Ching

POLYPODIACEAE

LEPISORUS MACROSPHAERUS (Baker) Ching, Bull. Fan Mem. Inst. Biol. **4:** 73 (1933).

Polypodium macrosphaerum Baker, Kew Bull. (1895) 55; Christ, Bull. Soc. Bot. France **52:** Mém. 1. 15 (1905); C. Chr. Ind. Fil. 542 (1906); Takeda, Notes, R. Bot. Gard. Edinb. **8:** 283 (1915); C. Chr. Contr. U. S. Nat. Herb. **26:** 319 (1931).

Polypodium intramarginale Baker; Christ, Bull. Herb. Boiss. ser. 2. **3:** 509 (1903); Baker, Kew Bull. (1906) 13.

Rhizome rather thick, creeping, epigaeous, naked, except the growing tip and the base of stipe, which both are sparcely scaly; *scales* brown, thin, concolorous, ovate, obtuse, dorsally affixed, margin entire, luminae medium-sized, uniform, clear, deciduous; *frond* rather distant, 30-50 cm long, to 3 cm broad, wingless stipe long, terete, naked, glabrous, or more often scaly underneath, when young; *texture* coriaceous, color greenish; *venation* prominent; *sori* large, oblong, intramarginal, or scmetimes some distance below the margin.

Yunnan: Mengtze, *Hancock 49* (type); *A. Henry 10042A, 13129 13363;* west of Tali, *J. F. Rock 6869;* between Tengyueh and Lungling, *J. F. Rock 7103, 335;* Tsekou, *Ducloux 438, 186, 20, 1384. 955* (1908); Ta-hwa Shan, *K. K. Tsoong 2991;* Salween, *Capt. Kingdon Ward,* Jan. 1, 1924; près Tapintze, *Delavay 4358; Forrest 16195, 16219;* between Tengyueh and Burmese border, *J. F. Rock 7283;* between Kambaiti and Tengyueh, *J. F. Rock 7538.* Kweichow: Houang-tsao-pa, *Cavalerie 7293;* Kweiting, *Y. Tsiang 5319;* Tuyum, *Y. Tsiang 5707;* Paichai, *Y. Tsiang 6128.* Kwangsi: Lin Yin, Tsing-lung Shan, *R. C. Ching 7002.* Chekiang: Tien-mo Shan, *S. S. Chien 49, 159* (1929). Szechuan occid: Mapien, *W. P. Fang 3961;* O-shan, *W. P. Fang 6664, 6672;* Opien, *W. P. Fang 7253.*

Himalaya: Khasia, *C. B. Clarke 43627A.*

A very distinct species endemic in Central and West China, creeping over moss-clad but rather exposed cliffs, or on rocks in thickets.

Plate 62. Fig. 1. habit sketch (natural size). 2. section of a lamina, showing venation and position of sori (×4). 3a-b. peltate paraphyses (×50). 4. scale from underside of a lamina (×50). 5. scale from rhizome (×50).

第 六 十 二 圖

大 瓦 葦 (水龍骨科)

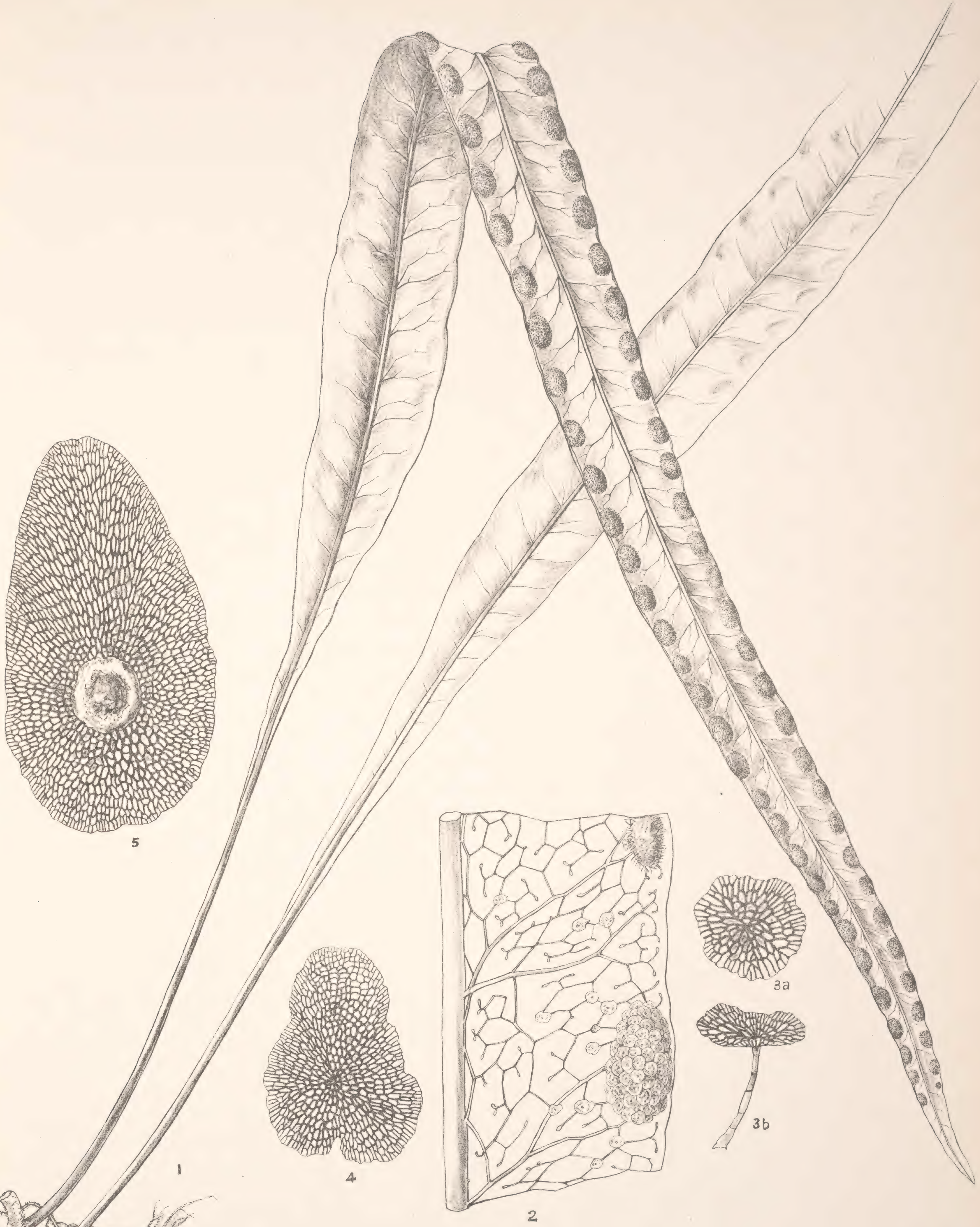
LEPISORUS MACROSPHAERUS (Baker) Ching

地下莖橫生，頗肥，光滑；僅於葉之基部及莖之幼部鱗片疏生，黃色，卵形，圓頭，全緣，網眼等大，形頗大而透明，久則脫落；葉間距離甚大，葉長三十至五十粉，寬約達三粉，葉柄亦甚長，葉面光滑，綠色，或於下面著疏生之鱗，革質，葉脈頗明顯；子囊羣形大，橢圓形，近邊着生，然有時離邊頗遠。

分布： 雲南，四川，貴州，廣西，浙江(天目山)，湖南及喜馬拉亞山。

本種爲本屬特殊之一種，常生於蘚苔所生之石上。

圖註： 1.本種全形(自然大)， 2.葉體之一部，表示葉脈及子囊羣之位置(放大三倍)， 3 a-b.子囊羣上之楯形鱗片(放大五十倍)， 4. 葉體下面之鱗片(放大五十倍)， 5. 莖上之鱗片(放大五十倍)。



LEPISORUS MACROSPHAERUS (Baker) Ching

大　瓦　葦

C. R. Feng Del. et Lith.

PLATE 63

LEPISORUS MACROSPHAERUS (Bak.) var. **ASTEROLEPIS** (Bak.) Ching

POLYPODIACEAE

LEPISORUS MACROSPHAERUS (Bak.) var. **ASTEROLEPIS** (Bak.) Ching, Bull. Fan Mem. Inst. Biol. **4:** 74 (1933).

Polypodium asterolepis Baker, Journ. Bot. (1888) 330; Christ, Bull. Acad. Géogr. Bot. (1906) 105.

Polypodium aspidiolepis Baker, Ann. Bot. **5:** 474 (1891); Diels in Engl. Jahrb. **29:** 204 (1901).
Polypodium excavatum var. *asterolepis* C. Chr, Ind. Fil. 511 (1906).
Polypodium macrosphaerum var. *asterolepis* C. Chr. Acta Horti Gotob. **1:** 101 (1024).

The present variety differs from the type in much smaller lanceolate frond of a more coriaceous texture, often clear flavescent color, more or less, oblong, oblique, medial sori and completely hidden venation.

Szechuan: Mt. Omei, *E. Faber 1063* (type); *Brown 76; Wilson 5221; W. P. Fang 3057;* Tchen-kou-tin, *Farges 95;* Nanchuan, *W. P. Fang 1080, 1424;* Kuan Hsien, *W. P. Fang 2162;* Hanynang Hsien, *W. P. Fang 3769;* Kating, *W. P. Fang 3682;* Hon-ya Hsien, *W. P. Fang 8419, 8423,8424;* Opien, *T. F. Lou 159, 49,* Sept. 15, 1929. Shensi: Tsing-lin, *David,* March, 1837; Thæ-pei Shan, *Giraldi,* Sept. 1397; *Purdom 95.* Kwei-chow: Kwei-yang, *Bodinier 23;* Gan-chow, *Cavalerie 3734;* Van-ching Shan, *Y. Tsiang 7585;* Tsin-gai, *Bodinier 2088.* Kwangsi: Lungchow, *Morse 24.* Anwhei: Wu-yuan, *R. C. Ching 8912;* Whang Shan, *R. C. Ching 8552.* Kiangsi: Lu-shan, *A. N. Steward 2674; N. K. Up 1829.* Hupeh: Patung, *Henry 3653, 1723, 2556; E. H. Wilson 2625;* Shin-shan Hisen, *S. S. Chien 8329.* Yunnan: Haut Mekong, *Souliè 1609; E. E. Maire 1388* (1913); environs de Yunnan-sen, *Ducloux 185; 1384;* Chetcho-tze, *Delavay 10;* Tsang Shan, *Delavay 4215,* March, 1890; Mengtze, *Leduc* (1891).

The type specimen seems to be very distinct from *Lepisorus macrosphaerus* (Baker), but in the presence of ample material from different localities and diverse habitats, it is gradually led up by intermediate forms to the preceding species. The differences in characters referred to above are due largely to the drier conditions under which this fern happens to grow. Consequently, specimens from southern part of Shensi and Eastern China are more referrable to this variety than to the typical form of *L. macrosphaerus*, because ecological conditions in these localities are usually much drier than those in the southwestern part of the country.

Plate 63. Fig. 1. habit sketch (natural size). 2. section a lamina, showing venation and position of sorus (×4). 3. peltate paraphysis from a sorus (×50). 4. scale from underside of a lamina (×50). 5. scale from rhizome (×50).

第 六 十 三 圖

黃 瓦 葦 (水 龍 骨 科)

LEPISORUS MACROSPHAERUS (Baker) var. **ASTEROLEPIS** (Baker) Ching

本亞種之異于原種者，爲其較小之葉體，厚革質，呈鮮橙黃色，及子囊羣位于葉邊與中肋之中央；莖上之鱗片爲急尖頭，然此不盡然者。

分布： 同於原種，北向直達陝西南部，南及皖南之黃山與江西之廬山。

本亞種爲長江上下游各省普通產，培柯氏初名之曰 Polypodium asterolepis，似爲一不同之種，然其後由各地所得標本漸豐，始證明其不過爲大瓦葦之一亞種，其形體之不同，概由於生產地點濕度之差異有以致之耳；換言之，其生於乾燥地點者，則葉體小，子囊羣位于葉之中央。

圖註： 1. 本種全形（自然大）， 2. 葉體之一部， 表示葉脈及子囊羣之位置(放大四倍)， 3. 着生於子囊羣上之楯形鱗片（放大五十倍）， 4. 葉體下面之鱗片（放大五十倍）， 5. 莖上之鱗片（放大五十倍）。

LEPISORUS MACROSPHAERUS (Baker) var. **asterolepis** (Baker) Ching

黃　瓦　韋

C. R. Feng Del. et Lith.

PLATE 64

LEPISORUS KUCHENENSIS (Wu) Ching

POLYPODIACEAE

LEPISORUS KUCHENENSIS (Wu) Ching, Bull. Fan Mem. Inst. Biol. **4:** 69 (1932).

Polypodium kuchenense Wu, Bull. Dept. Biol. Sun Yatsen Univ. n. **3:** 276 pl. 129 (1932); Ching, ibid., n. **6.** 29. 1933.

Rhizome thick, creeping over rocks, densely imbricatingly scaly; *scales* oblong-ovate, thin, light-brown, entire, dorsally affixed, finely reticulated, luminae medium-sized, clear, dimorphous, concolorous; *frond* far apart, about 30 cm long, 4-5 cm broad, broadly lanceolate, acuminate, very gradually attenuate to a thick, short stipe, margin thin, plane; *texture* herbaceous, color pale green, naked; *venation* quite distinct; *sori* large, roundish, somewhat nearer to the midrib.

Kwangsi: Yao Shan, Ku-shen, *S. S. Sin & K. K. Whang 2121, 8980,* alt. 4,500 feet, on rocks.

An unique species, endemic in Yao Shan, in the eastern part of Kwangsi Province. Closely allied to *L. excavatus* (Bory) and particularly the form from the Himalayas, differs chiefly in herbaceous (not chartaceous) leaves to 5 cm broad at the middle, and large, submedial, superficial sori, not punctate on the upperside.

Plate 64. Fig. 1. habit sketch (natural size). 2. portion of a lamina, showing venation and position of sori (×2). 3. peltate paraphysis from a sorus (×50). 4. scale from rhizome (×50).

第 六 十 四 圖

猺山瓦葦（水龍骨科）

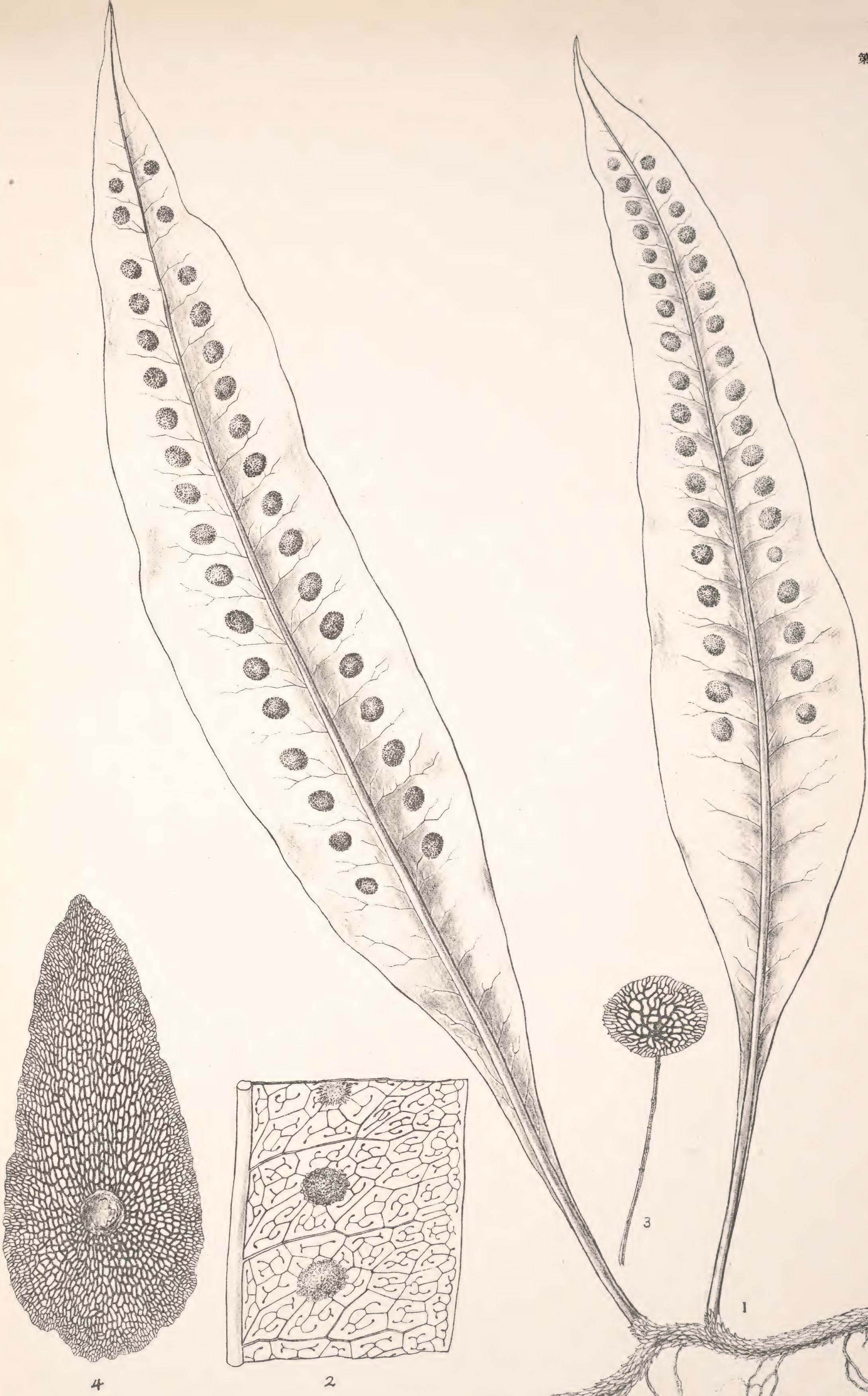
LEPISORUS KUCHENENSIS (Wu) Ching

地下莖頗肥，匍匐於岩石上；鱗片密生如瓦覆，長卵橢圓形，淡褐色，質薄，網眼透明，一色，全緣，腹部着生；葉疏生，甚大，長三十粉，寬四至五粉，闊披針形，漸尖頭，柄極短，葉邊平而薄，軟紙質，淡綠色，光滑，葉脈頗明顯；子囊羣大，略圓，稍貼近中肋。

分布： 廣西猺山；模式標本在廣州國立中山大學生物系。

本種爲本属特殊之一種，爲廣西猺山特產，其形體甚類凹瓦葦(Lepisorus excavatus)，然其葉體寬而質薄，子囊羣大而葉上面不呈凹形。

圖註： 1. 本種全形(自然大)， 2.葉之一部，表示葉脈及子囊羣之位置(放大二倍)， 3. 着生於子囊羣上之楯形鱗片(放大五十倍)， 4. 莖上之鱗片(放大五十倍)。



LEPISORUS KUCHENENSIS (Wu) Ching

猺山瓦葦

C. R. Feng Del. et Lith.

PLATE 65

LEPISORUS BICOLOR Ching

POLYPODIACEAE

LEPISORUS BICOLOR Ching, Bull. Fan Mem. Inst. Biol. **4:** 66 (1933).

Polypodium excavatum var. *bicolor* Takeda, Notes, R. Bot. Gard. Edinb. **8:** 279 (1915); Hand-Mzt. Symb. Sinic. **6:** 43 (1929); C. Chr. Contr. U. S. Nat. Herb. **26:** 319 (1931).

Rhizome rather thick, epigæous, densely imbricatingly scaly; *scales* adpressed, broadly ovate, short-acuminate with erosed margin, discolorous, luminæ in central band small, narrow, dark-colored and thick-walled, but quite clear with flexous, thin cell-walls towards the light-colored hyaline margin; *frond* about 1 cm apart, shortly but distinctly stipitate, stipe covered more or less in similar scales, lamina linear-lanceolate, attenuate to both ends, 15-20 cm long, 1.5-2 cm broad at the lower one-third, being the broadest part, margin plane; *texture* chartaceous, greenish, tinged brown, the underside and particularly along the midrib more or less scaly; *veins* obscure, but distinct under light; *sori* rounded, nearer to the midrib than to the margin.

Yunnan: Mengtze, *A. Henry 10088;* Tou-dza *Ducloux 2813;* Tong Chow, *E. E. Maire 6918B, 6061* (partim); Lao-houy Shan, près Tali, *Ducloux 5043;* Lickiang, *C. Schnesider 2956, 2117, 2808, 3125; G. Forrest 8083; J. F Rock 5887;* Salween, *Forrest 15091, 27076;* Laokou Chow, *Ducloux 955;* Mao-ku Chang, *Delavay,* July 7, 1883; Mengtze, *Hancock 39* (Kew No.); between Yungbei and Boloti, *Handel-Mazzetti 3329;* near Lickiang, *Handel-Mazzetti 3588.* Hupeh: Ichang, *A. Henry 2465;* Patung, *Henry 1739, 5315.* Shensi: Thae-pei Shan, *Purdom 96.* Szechuan occid: *Wilson 5317, 5317A, 2637, 5315;* Tatsienlu, *Wilson 2637;* Teng-hsiang-ying, *H. Smith 1893A;* Ta-hsiang-ling, *H. Smith 2088;* Moupin, *David.*

Sikkim: Kumaon, *Strachey and Winterbottom 2;* Darjeeling, *Griffith.*

Almost without exception, this fern has generally been identified as *Polypodium excavatum* by authors on the Northern Indian and western Chinese ferns, and more recently as var. *bicolor* by Takeda. In fact, it differs from the Himalayan *Polypodium excavatum* particullarly in scales, which are not only discolorous as first observed by Takeda but also much smaller than, and of an entirely different outline from, those in the other species. The extant herbarium material has also shown that this fern occupies rather a distinct though contiguous geographical area, namely, the western China, whence *P. excavatum* is so far unknown.

Plate 65. Fig. 1. habit sketch (natural size). 2. paraphysis from a sorus (×50). 3. scales from rhizome (×50).

第六十五圖

兩色瓦葦(水龍骨科)

LEPISORUS BICOLOR Ching

地下莖伏石壁或樹幹橫生，頗肥；鱗片緊覆，圓卵形，短尖頭，邊緣具不規則之齒，二色，中部爲不甚透明之深褐色，邊緣質薄而透明；葉間距離約一粉，柄短，葉體披針形，長二十粉，寬約一·五至二粉，下部三分之二處最寬，邊平，厚紙質，色綠而常呈黃色，柄及下面常被多少之黑色鱗，尤以中肋爲甚；葉脈隱約可識；子囊羣形圓，稍貼近中肋。

分布： 雲南及四川西部，湖北宜昌附近，陝西南部；西京亦產之，惟極稀少耳。

本種形體酷似凹瓦葦(Lepisorus excavatus)，昔之學者多以此名之，洎乎一九一五年，Takeda氏始認爲亞種，以其莖上鱗片呈二色故也；據余最近之研究，見其莖上鱗片，非特呈二色，且緊覆如瓦，其形體及大小亦大異，故認爲新種，其地理分布，慨限於中國西部高山，且甚普通，而與其相近之凹瓦葦則於此區域內甚爲罕見。

圖註： 1. 本種全形(自然大)， 2. 莖上之鱗片(放大五十倍)， 3. 子囊羣上之楯狀鱗片（放大五十倍)。

LEPISORUS BICOLOR Ching

兩　色　瓦　葦

C. R. Feng Del. et Lith.

PLATE 66

LEPISORUS OBSCURE-VENULOSUS (Hayata) Ching

POLYPODIACEAE

LEPISORUS OBSCURE-VENULOSUS (Hayata) Ching, Bull. Fan Mem. Inst Biol. **4:** 76 (1933).

Polypodium obscure-venulosum Hayata, Ic. Pl. Form. **5:** 322 (1915); C.Chr. Ind. Fil. Suppl. 27 (1913-16); Ogata, Ic. Fil. Jap. **3:** pl. 141 (1930).

Polypodium suprapunctatum Ching, nom. in herb.

Rhizome creeping, epigaeous, atratous, subnaked but densely scaly at the tip; *scales* lanceolate, acuminate, thin, brown, margin erosed, the central part above the base dark-colored, the base and margin light-colored, with irregular hyaline luminae with thin flexuos walls, shrivelled, at last fallen off; *frond* 25-30 cm long, or longer, 2 cm broad, or broader, apex rostrate, gradually attenuate downward into the long, blackish, naked stipe, margin plane; *texture* subcoriaceous, or thick chartaceous, greenish; *venation* obscure with distinctly punctate hydathodes on the upper surface; *sori* medium-sized, medial, covered when young with brown, peltate, shortly stalked paraphyses.

Kweichow: Keengtze, *Y. Tsiang 5000;* Van-ching Shan, *Y. Tsiang 7082 7903* (1930). Kwangtung: Sunyi, *P. S. Ko 51363; Y. K. Wang 31106;* Lohfau Shan, *C.O. Levine 1486; Levine & McClure 6819; N. K. Chun 41573;* Ko-chow, *Y. Tsiang 3208;* Lockchong, *N. C. Chun 43024;* Lung-tau Shan, *To & Tsang 12513, 12051* (1923). Hainan: Five Finger Mt., *F. A. McClure 9504.* Kwangsi: Bai-mar-chen, near Lin Yin, *R. C. Ching 6670* (1928); Tsing-Lung Shan, north of Lin Yin, *R. C. Ching 6889.* Hongkong: Lantao, *Faber,* Aug. 1888; *Warburg.*

Closely related to *L. nudus* (Hooker) from India and Ceylon, differs in obscurely indigo-bluish stipe, broader lamina of green color, which is always broadened towards the base and rostrate at apex.

Plate 66. Fig. 1. habit sketch (natural size). 2. peltate paraphysis from a sorus (×50). 3. scale from rhizome (×50).

第六十六圖

粵瓦葦（水龍骨科）

LEPISORUS OBSCURE-VENULOSUS (Hayata) Ching

地下莖橫生，黑色，幼部鱗片密生，餘半光滑；鱗片長披針形，漸尖頭，膜質，淡黃色，邊緣具短齒，網眼細而透明，惟中央呈深褐色；葉長二十五至三十粉或過之，寬二粉，葉端嘴形，上部漸狹，柄頗長，色黝而光滑，亞革質或厚紙質，綠色，葉脈隱約，上面水孔明顯；子囊羣中大，位於中肋及葉邊中央，幼時遍覆黃色短柄楯形鱗片。

分布： 貴州，廣東，瓊洲島，廣西，台灣。在廣東尤爲普通。

本種頗類印度及錫蘭產之光瓦葦（Lepisorus nudus），然其葉柄爲黝靛青色，葉體較寬，色綠，其最寬處在下部三分之一，頂部嘴形，故易於識別。

圖註： 1. 本種全形(自然大)， 2. 着生於子囊羣上之楯形鱗片（放大五十倍）， 3. 莖上之鱗片（放大五十倍）。

LEPISORUS OBSCURE-VENULOSUS (Hayata) Ching

粵　瓦　葦

C. R. Feng Del. et Lith.

PLATE 67

LEPISORUS CLATHRATUS (Clarke) Ching

POLYPODIACEAE

LEPISORUS CLATHRATUS (Clarke) Ching, Bull. Fan Mem. Inst. Biol. **4:** 71 (1933).

Polypodium clathratum Clarke, Ferns N. Ind. in Trans. Linn. Soc. ser. 2. Bot. **1:** 559 pl. 82 f. 1 (1880); C. Chr. Ind. Fil. 517 (1906).

Polypodium Alberti Regel, Acta Horti Petr. **7:** 622 (1881).

Pleopeltis clathrata Bedd. Handb. Fern Brit. Ind. 348 (1883).

Polypodium Uchiyamae Makino, Tokio Bot. Mag. **20:** 30 (1906); Ogata, Ic. Fil. Jap. **2:** pl. 91 (1929), teste Takeda.

Polypodium Soulieanum Christ, Bull. Soc. Bot. France **52:** Mém. 1. 15 (1905).

Polypodium lineare var. *abbreviatum* Christ, Bull. Acad. Géogr. Bot. (1902) 153.

Rhizome quite thick, creeping, hypogaeous, densely scaly; *scales* ovate-acuminate fuscous, thin, with some long-protruding teeth on the margin, coarsely clathrate with large, uniform, isodiametrical and more or less iridescent luminae; *frond* linear-lanceolate, generally 10-15 cm long, 1-1.3 cm broad, or sometimes much reduced, gradually attenuate towards the slender, pale straminous, and rather long stipe, leaf-apex blunt or subacute, or rarely subacuminate, margin entire, plane, or sometimes slightly wavy; *texture* thin herbaceous, color light green, underside with a few similar scales at first; *venation* distinct;*sori* medium-sized, rounded, medial.

Yunnan: Hokin, *Delavay 1716*. Kan-su: Choni, *Purdom 1965;* near Pin-fan, *R. C. Ching 571,* July 20, 1923. Shensi: Thae-pei Shan, *Giraldi,* August, 1890; *Purdom 96, 1065; K. S. Hao 4414, 4470,* Sept. 20, 1932. Hopei: Peiping Mountains, *Hancock 9, 17* (1876); Siawutai Shan, *C. T. Li 2484,* August, 1932; ibid. *H. W. Kung 1201,* Sept. 9, 1930. Shansi: Koti Shan, *W. Y. Hsia 1751,* Sept. 7, 1929; Tawutai Shan, *T. H. Serre 2335* (1929); Suiyuen, Halachingkow, Tatsin Shan, *W. Y. Hsia 2855,* July 24, 1931. Szechuan: Tatsienlu, *Soulié 759* (1893); Sung-pan, *H. Smith 4082, 2536, 2726;* Chen-chiang-kuan, *H. Smith 2609;* Dongrergo, *H. Smith 3615;* Drogochi, *H. Smith 4470.*

Thian-shan: *H. Appelton 530* (1908). Turkestan: *Fetosson.*

Distr: Turkestan, Afghanistan, Kashmir, Nepal to W. and N. W. China, Siberia, Thian Shan, Japan and Loo-choo Islands (fide Takeda).

Although quite variable in size, this fern can always be distinguished from others by its hypogaeous rhizome, thin herbaceous, green leaves with rather distinct venation, and very characteristic fuscous, clathrate, iridescent scales on rhizome and sori.

Plate 67. Fig. 1. habit sketch (natural size). 2. portion of a lamina, showing venation and position of sori (×2). 3. scale from rhizome (×50).

第 六 十 七 圖

網 眼 瓦 葦 (水 龍 骨 科)

LEPISORUS CLATHRATUS (Clarke) Ching

地下莖橫生土中，頗肥；鱗片密生，卵形，漸尖，色黑，質薄，邊緣具長齒，網眼大而透明；葉狹披針形，下部漸狹，鈍頭或短尖頭，形體大小不一，普通十至十五粉，寬一至一·三粉，生於乾燥地者，長僅達四五粉耳，質薄，色綠，葉脈頗顯著，邊平，下面常覆黑色鱗片；子囊羣形中大，圓形，位於中肋與葉邊之中央。

分布： 雲南，山西，陝西，察哈爾 河北(北平附近)，四川，甘肅，新疆，西比利亞，天山；日本及琉球羣島亦產之。

本種爲亞洲温帶山地普通產，雖其形體大小不一，然因其綠色薄紙質之葉體及其莖部着生黑色薄質大網眼之鱗片，易與他種識別。

圖註： 1. 本種全形(自然大)， 2.葉體之一部，表示葉脈及子囊羣之位置(放大二倍)， 3. 莖上之鱗片(放大五十倍)。

LEPISORUS CLATHRATUS (Clarke) Ching

網　眼　瓦　葦

C. R. Feng Del. et Lith.

PLATE 68

LEPISORUS SORDIDUS (C. Chr.) Ching

POLYPODIACEAE

LEPISORUS SORDIDUS (C. Chr.) Ching, Bull. Fan Mem. Inst. Biol. **4:** 78 (1933).

Polypodium sordidum C. Chr. Contr. U. S. Nat. Herb. **26:** 320 (1931).

Rhizome rather short-creeping, hypogaeous, 3 mm. thick, blackish, young parts densely scaly; *scales* black, entirely opaque, rigid, lanceolate, acuminate, subentire or sparingly short-toothed, concolorous, luminae very narrow with thick, dark-colored cell-walls; *frond* approximate, 30 cm or longer, 3-4 cm broad, lanceolate, attenuated to both ends, stipe rather long, greenish-straminous, smocky; *texture* coriaceous, pale green, smocky on both sides; *venation* hidden; *sori* large, rounded, supramedial, superficial, in the upper part of lamina.

Yunnan: Between Man Lo and Lungling, *J. F. Rock 7160* (type); between Kambaiti and Tengyueh, *J. F. Rock 7537*. Szechuan austro-occid: Hon-ya Hsien, *W. P. Fang 8493*, August 21, 1930.

A large fern of the genus, habitally resembles *L. macrosphaerus* (Baker), or *L. sublinearis* (Baker), differing from both in entirely black and nearly opaque rhizome scales and in smocky appearance of leaves. From *L. sublinearis* (Baker) it further differs in its relatively long stipe and supramedial sori.

Plate 68. Fig. 1. habit sketch (natural size). 2. peltate paraphysis from a sorus (×50). 3. scale from rhizome (×50).

第 六 十 八 圖

黑鱗瓦葦(水龍骨科)

LEPISORUS SORDIDUS (C. Chr.) Ching

地下莖頗短，橫生，黑色，幼部鱗片密生，炭黑色，質厚，不透明，披針形，漸尖頭，亞全緣或具較小疏鋸齒；葉頗密生，長三十糎，寬三至四糎，披針形，柄頗長，淡綠色，然呈炭灰狀，革質，葉脈不顯；子囊羣大，圓形，貼近葉邊，位於葉之上半部。

分布： 雲南，四川西南部。

本種形似滇瓦葦，然其莖上鱗片爲炭黑色，質厚不透明，葉柄亦較長，故易於識別。

圖註： 1.本種全形(自然大)， 2.着生於子囊羣上之楯形鱗片(放大五十倍)， 3.莖上之鱗片(放大五十倍)。

LEPISORUS SORDIDUS (C. Chr.) Ching

黑　鱗　瓦　葦

C. R. Feng Del. et Lith.

PLATE 69

LEPISORUS SUBOLIGOLEPIDUS Ching

POLYPODIACEAE

LEPISORUS SUBOLIGOLEPIDUS Ching, Bull. Fan Mem. Inst. Biol. **4:** 77 (1933).

Polypodium neurodioides C. Chr. var. **2.** C. Chr. Contr. U. S. Nat. Herb. **26:** 319 (1931).

Rhizome creeping, thick, densely scaly; *scales* as in *L. Thunbergianus* (Kaulf.); *frond* rather distant, 20-30 cm long, 2-3 cm broad, lanceolate, long-attenuate towards apex, the broadest part being at the lower one-third, densely scaly on the under side and stipe; *texture* rigidly chartaceous or subcoriaceous; *sori* medium-sized, medial, confined to the upper part of lamina.

Yunnan: Mile District, *A. Henry 10088A* (type); between Tengyueh and Lungling, *J.F. Rock 7113*, on tree.

Quite a distinct species, habitally resembling *L. oligolepidus* (Baker), differing in thinner texture, long-attenuate leaf-apex and the broadest part of the lamina being at, the lower one-third, as well as in much smaller medial sori.

Plate 69. Fig. 1. habit sketch (natural size). 2. portion of a leaf, showing venation and position of sori (×3). 3a-b. peltate paraphyses from a sorus (×50). 4a-b. scales from underside of lamina (×50). 5. scale from rhizome (×50).

第 六 十 九 圖

擬鱗瓦葦(水龍骨科)

LEPISORUS SUBOLIGOLEPIDUS Ching

地下莖橫生，頗肥；鱗片密生，其形體及組織一如瓦葦；葉間距離頗大，體長二十至三十粉，寬二至三粉，披針形，向端部細長，下部三分之一處最寬，亞革質，上面光滑，下面黑色鱗片密生；子囊羣中大，生於葉之上半部，位於中央。

分布： 雲南。

本種頗爲特殊，形體頗似鱗瓦葦 (L. oligolepidus)，然其葉質較薄，葉之上部細長，其下部三分之一處最寬，子囊羣較小而生於中央，不貼近中肋，故易識別。

圖註： 1.本種全形(自然大)， 2.葉體之一部，表明葉脈及子囊羣之位置(放大三倍)， 3 a-b. 着生於子囊羣上之楯形鱗片(放大五十倍)， 4 a-b. 葉體下部之鱗片(放大五十倍)， 5.莖上之鱗片 (放大五十倍)。

LEPISORUS SUBOLIGOLEPIDUS Ching

擬　鱗　瓦　葦

C. R. Feng Del. et Lith.

PLATE 70

LEPISORUS OLIGOLEPIDUS (Baker) Ching

POLYPODIACEAE

LEPISORUS OLIGOLEPIDUS (Baker) Ching, Bull. Fan Mem. Inst. Biol. **4:** 80 (1933).

Polypodium oligolepidum Baker, Gard. Chron. n.s. **14:** 494 (1880); Takeda, Notes, R. Bot. Gard. Edinb. **8:** 276 (1915); C.Chr. Contr. U.S.Nat. Herb. **26:** 316 (1931), partim.

Polypodium lineare var. *oligolepidum* Christ, Bull. Soc. Bot. France **52:** Mém. 1. 15 (1905); C. Chr. Ind. 540 (1906)

Polypodium trabeculatum Cop. Phil. Journ. Soc. Bot. **3:** 283 (1908).

Polypodium lineare Takeda, l.c. 269 (Henry 7795).

Rhizome rather thick, creeping, densely scaly; *scales* black, lanceolate-subulate from a broad ovate base, rigid, structurally similar to those in *L. Thunbergianus* (Kaulf.); *froud* lanceolate, 15-30 cm long, 1.5-2 cm broad at the middle, shortly stipitate; *texture* coriaceous; *veins* hidden, color obscurely blackish, underside densely clad in small, ovate, cuspidate, adpressed, blackish scales, glabrous and punctate on the upper side; *sori* large, rounded, closer to the midrib than to the margin.

Kiangsi: Lu-shan, *Maires* (type); *Dr. Shearer* (1873). Hupeh: I-chang, Nanto, *A. Henry 3049*. Kwangtung: Lienchow, *C. G. Matthew*, December 4, 1907. Kweichow: Gan-chow, *Cavalerie 7795, 155;* Pin-fa, *Cavalerie 1096, 3748, 1597;* Gan-pin, *Bodinier 2017*, Yinkiang, *Y. Tsiang 7848*, December 20, 1930; Kwangcheng, *Y. Tsiang 8607*. Yunnan: Tsekou (Haut Mekong), *Soulié 1060* (partim); Salween, *Capt. Kingdon Ward*, Jan. 2, 1924; Tong-Chow, *E.E.Maire; Esquirol 3750;* Mengtze, *A. Henry 9062; Hancock 104* (1894-95); Tchong-Shan, *Ducloux 39*.

Burma: Sadon, *J.F.Rock 7494*.

Plate 70. Fig. 1. habit sketch (natural size). 2. peltate paraphysis from a sorus (×50). 3. scales from rhizome (×50).

第 七 十 圖

鱗 瓦 葦 (水 龍 骨 科)

LEPISORUS OLIGOLEPIDUS (Baker) Ching

地下莖較肥，橫生；鱗片密生，色黑，質厚，線披針形，其構造同於瓦葦；葉披針形，長十五至三十粉，寬一·五至二粉，中部最寬，具短柄，革質，略帶黑色，下面黑色鱗片密生，久則脫落，上面光滑；子囊羣形大而圓，貼近中肋。

分布： 江西廬山，湖北，貴州，雲南，廣東。

本種形體極似瓦葦，然形體較寬，子囊羣極大，葉之下面有黑色鱗片密生，故易與瓦葦分別。

圖註： 1. 本體全形(自然大)， 2. 着生於子囊羣上之楯形鱗片(放大五十倍)， 3. 莖上之鱗片(放大五十倍)。

LEPISORUS OLIGOLEPIDUS (Baker) Ching

鱗　瓦　葦

C. R. Feng Del. et Lith.

PLATE 71

LEPISORUS SUBCONFLUENS Ching

POLYPODIACEAE

LEPISORUS SUBCONFLUENS Ching, Bull. Fan Mem. Inst. Biol. **4:** 83 (1933).

Polypodium neurodioides C. Chr. var. **4.** C. Chr. Contr. U. S. Nat. Herb. **26:** 319 (1931).

Rhizome creeping, densely scaly; *scales* long, linear-subulate from an ovate base, atratous, dentate, luminae narrow, elongate, opaque with dark-colored cell-walls, lower part provided with broad hyaline margin, consisting narrow clear luminae with thin flexous walls; *frond* rather close together, 20-30 cm long, 5 mm broad, linear-elongate, gradually acuminate towards apex, margin somewhat narrowly revoluted; *texture* coriaceous, color greenish; *sori* elongate-oblong, approximate, or more or less fused towards the leaf-apex.

Yunnan: Alpine Regions of Silo, above Tseku, *J. F. Rock 8727*. Type in the Botanical Museum, Copenhagen, cotype in U. S. National Herbarium, Washington, D. C., and Herbarium of the Metropolitan Museum of Natural History, Nanking.

An alpine species of the genus, closely related to *L. vittarioides* Ching, differs in more elongate fronds and subconfluent upper sori.

Plate 71. Fig. 1. habit sketch (natural size). 2. peltate paraphysis from a sorus (×50). 3. scale from rhizome (×50).

第 七 十 一 圖

連 珠 瓦 葦 (水 龍 骨 科)

LEPISORUS SUBCONELUENS Ching

地下莖橫生；鱗片密生，細長，黑色，邊緣具齒，網眼細長，黝色，不透明，基部圓形具透明闊邊；葉頗密生，長二十至三十糎，寬五糎，細長線形，邊緣稍反捲；革質，淡綠色．子囊羣長橢圓形，接近，向葉端常接合。

分布： 雲南西部高山。

本種爲高山產，其形體極似書帶瓦葦 (Lepisorus vittarioides Ching)，然其葉狹長，子囊羣向葉端常接合呈連珠狀，故易識別。

圖註： 1. 本種全形(自然大)， 2. 着生於子囊羣上之楯形鱗片（放大五十倍）， 3. 莖上之鱗片(放大五十倍)。

LEPISORUS SUBCONFLUENS Ching

連　珠　瓦　葦

C. R. Feng Del. et Lith.

PLATE 72

LEPISORUS HETEROLEPIS (Rosenstock) Ching

POLYPODIACEAE

LEPISORUS HETEROLEPIS (Rosenstock) Ching, Bull. Fan Mem. Inst. Biol. **4:** 86 (1933).

Polypodium lineare var. *heterolepis* Rosenstock in Fedde, Repert. Sp. Nov. **12:** 247 (1913).

Rhizome creeping, epigaeous, densely scaly; *scales* lanceolate-subulate from a broadly ovate base, atratous, margin hyaline with numerous irregularly protruding teeth, luminae opaque, very narrow with thick, dark-colored walls; *frond* rather approximate, linear-elongate, 20-27 cm long, to 5 mm broad, margin narrowly reflexed; *texture* coriaceous, color greenish; *venation* entirely hidden; *sori* oblong, far apart, closely packed between the midrib and margin, which is more or less undulated due to the expanding sori.

Yunnan: Between Tengyueh and Lungling, *J. F. Rock 7168;* below Kuyung, *J. F. Rock 7558.* Also Himalayas and Formosa.

In habit this fern is exactly identical with the narrow-leaved form of *L. loriformis* (Wall.), called *Polypodium subintegrum* Baker, which differs in fuscous, ovate-acuminate, concolorous and coarsely clathrate scales with large, clear, almost isodiametrical luminae. The affinity with *L. subconfluens* Ching is very great, which differs in close, or subconfluent, longer sori and hardly wavy leaf-margin.

Plate 72. Fig. 1. habit sketch (natural size). 2. peltate paraphysis from a sorus (×50). 3. scale from rhizome (×50).

第七十二圖

茀瓦葦（水龍骨科）

LEPISORUS HETEROLEPIS Ching

地下莖橫生；鱗片密生，狹長披針形，基部卵形，黑色，邊緣透明，具不規則之跳齒；葉頗密生，狹長線形，長二十至二十七粉，寬達五糎，邊稍反捲，革質，淡綠色，葉脈不顯；子囊羣橢圓，羣間距離大，緊位於中肋及波形葉邊之間。

分布： 雲南，喜馬拉亞，台灣。

本種形體極似葉體狹長之帶瓦葦，倍柯氏名之曰 Polypodium subintegrum，然其莖上鱗片之組織則大異。本種與連珠瓦葦十分相似，所不同者，爲其彼此遠離之子囊羣及波形之葉邊耳。

圖註： 1. 本種全形(自然大)， 2. 着生於子囊羣上之鱗片(放大五十倍)， 3. 莖上之鱗片(放大五十倍)。

LEPISORUS HETEROLEPIS (Rosenst.) Ching

芰　瓦　葦

C. R. Feng Del. et Lith.

PLATE 73

LEPISORUS ANGUSTUS Ching

POLYPODIACEAE

LEPISORUS ANGUSTUS Ching, Bull. Fan Mem. Inst. Biol. **4:** 86 (1933).

Polypodium lineare var. *Thunbergianum* f. *caudato-attenuata* Takeda, Notes, R. Bot. Gard. Edinb. **8:** 269 (1915).

Rhizome rather thick, wide-creeping, densely scaly; *scales* as in *L. Thunbergianus* (Kaulf.); *frond* distant, narrowly linear, 20 cm or longer, about 0.5 cm broad, margin narrowly linear, 20 cm or longer, about 0.5 cm broad, margin narrowly revoluted; *texture* soft, subcoriaceous, color pale green; *sori* oblong-elongate, closely placed between the midrib and margin.

Hupeh: *E. H. Wilson 2642.* Yunnan: Szemeo, *Henry 10062A;* Mengtze, *Henry 9194B.* Szechuan austro-occid: Opien, *T. F. Lou 171, 107* (type), Sept. 21, 1929. Chekiang: Tien-mo Shan, *S. S. Chien 170* (1920).

The affinity of this species to *L. Thunbergianus* (Kaulf.) is sufficiently clear, to which it was raferred as forma *caudato-attenuata* by Takeda, from which it differs in extraordinarily slender habit with caudato-atteunate leaf-apex, and in elongate sori.

Plate 73. Fig. 1. habit sketch (natural size). 2. peltate paraphysis from a sorus (×50). 3. scale from rhizome (×50).

第 七 十 三 圖

狹 葉 瓦 葦 (水 龍 骨 科)

LEPISORUS ANGUSTUS Ching

地下莖頗肥，橫生；鱗片密生，其形體及組織同於瓦葦；葉間距離較大，體爲狹線形，長二十粉或過之，寬達五糎，邊緣稍反捲，軟革質，淡綠色；子囊羣長橢圓形，緊位於中肋及葉邊之間。

分布： 湖北西部，雲南，浙江天目山。

本種爲本屬細狹之一種，昔人認爲瓦葦之變種，然其狹長線形之葉及綠色較軟之質，易於識別。

圖註： 1. 本種全形(自然大)， 2. 着生於子囊羣上之 楯形鱗片(放大五十倍)， 3. 莖上之鱗片(放大五十倍)。

LEPISORUS ANGUSTUS Ching

狹　葉　瓦　葦

C. R. Feng Del. et Lith.

PLATE 74

LEPISORUS USSURIENSIS (Regel et Maack) Ching

POLYPODIACEAE

LEPISORUS USSURIENSIS (Regel et Maack) Ching, Bull. Fan Mem. Inst. Biol. **4:** 91 (1933).

Pleopeltis ussuriensis Regel et Maack, Mém. Acad. Sci. Petersb. VII. **4:** 4. 175 (1861).
Polypodium ussuriense Regel, Acta Horti Petr. **7:** 663 (1881); Ogata, Ic. Fil. Jap. **2:** pl. 92 (1929).

Polypodium lineare var. *distans* Makino, Tokio Bot. Mag. **15:** 60 (1901).
Polypodium distans Makino, Tokio Bot. Mag. **20:** 33 (1906).
Polypodium lineare var. *ussuriense* C. Chr. Ind. Fil. 572 (1906); Takeda, Notes, R. Bot. Gard. Edinb. **8:** 271 (1915).

Polypodium lineare var. *coraiense* Christ in Fedde, Repert. Sp. Nov. **5:** 10 (1908).
Polypodium annuifrons var. *distans* Nakai, Fl. Kor. **2:** 44 (1911).

Rhizome rather slender, wide-creeping, sparcely scaly; *scales* appressed, atratous, rigid, ovate-acuminate, dentate, luminae opaque, small, with thick, dark-colored cell-walls; *frond* distant, slender, narrowly linear-lanceolate, rather long-stipitate, apex long-attenuate; *texture* coriaceous, color greenish; *sori* medium-sized, medial, far apart.

Manchuria: Er Tiengtien Sze, *P. H. Dorsett 3048* (1925); Henh-tao Hotze, *P. H. Dorsett 3244;* Mefuv, *P. H. Dorsett 4216;* Kirin, *Komarov 46;* from Mukden to Kirin, *James,* May-August, 1886; Sching-king, *J. Ross 4.* Hopei: Shanhaikwan, Kiao-shan, *R. P. Licent 1525* (1915); Tungliang, *C. F. Li & W. K. Hsia 2331.* Shantung: Tai-shan, *Jacob 1346;* Tsingtao, Laushan, *Reymand 226,* Aug. 1911; *A. Engler 7038,* June, 1913.

Korea: Quelpaert, *Taquet 83;* Diamont Mt., *Faurie 134, 112.* Also Japan and eastern Siberia.

A common fern in the regions noted. This is generally considered by authors as identical with, or as a variety of, *Polypodium lineare* Thunberg from warmer regions farther south, but differs in much slender habit, long-stipitate, narrower and distant leaves on much thinner rhizome, and in more widely separated, smaller, medial sori.

Plate 74. Fig. 1. habit sketch (natural size). 2. peltate paraphysis from a sorus (×50). 3. scale from rhizome (×50).

第 七 十 四 圖

烏 蘇 里 瓦 葦 (水 龍 骨 科)

LEPISORUS USSURIENSIS (Regel et Maack) Ching

地下莖細長，匍匐甚廣；鱗片疏生，極似瓦葦； 葉疏生，細長，狹線披針形， 柄頗細長， 葉端尖長，革質，綠色；子囊羣中大，位於中肋與葉邊之間，相距甚遠。

分布： 東三省，熱河，河北；山東，朝鮮，日本北部及西比利亞東部。

本種在其分布區域極爲普通，昔人認爲與瓦葦同，實則不然，因其地下莖及葉體均甚細長，子囊羣形體小而距離大，且其分布區域，位於瓦葦之北，實有顯著之差異也。

圖註： 1. 本種全形 (自然大)， 2. 着生於子囊羣上之楯形鱗片 (放大五十倍)， 3. 莖上之鱗片 (放大五十倍)。

LEPISORUS USSURIENSIS (Regel et Maack) Ching

烏　蘇　里　瓦　葦

C. R. Feng Del. et Lith.

PLATE 75

LEPISORUS CONTORTUS (Christ) Ching

POLYPODIACEAE

LEPISORUS CONTORTUS (Christ) Ching, Bull. Fan Mem. Inst. Biol. **4:** 90 (1933).

Polypodium contortum Christ, Bot. Gaz. **51**. 347 (1911).

Polypodium lineare var. *contortum* Christ, Nuovo Giorn. Bot. Soc. Ital. n. s. **4:** 98 pl. 1. f. 3 (1897); Diels in Engl. Jahrb. **29:** 204 (1901).

Polypodium lineare var. *Thunbergianum* f. *contorta* Takeda, Notes, R. Bot. Gard. Edinb. **8:** 270 (1915).

Polypodium Onoei Franch. Pl. David. in Nouv. Archiv. II. **7:** 355 (1883, non 1879).

Polypodium lineare Franch. (non Thunberg) l. c. 354; Christ, Bull. Herb. Boiss. **6:** 860 (1898); Bull. Acad. Géogr. Bot. (1906) 105; Bot. Gaz. **51:** 374 (1911).

Rhizome thick, wide-creeping, densely scaly on the young parts; *scales* ovate-acuminate, rufo-brown, appressed, dentate, luminae elongate, rather clear except the central ones being darker colored with thick walls; *frond* distant, 15-40 cm long, about 1 cm broad, linear, naked; *texture* coriaceous, color pale green; *sori* ovate, large, medial, but oblong and oblique when young.

Shensi: Mt. Ku-lu, *Giraldi*, August, 1894 (type); Kuan-tou San, *Giraldi*, Nov. 5, 1896; Ngo-shan, *Giraldi*, Oct. 1894; Rin-san, *Giraldi*, July 23, 1897; Tsinglin, *David*, April, 1874; ibid. *David*, March, 1873; *Purdom 92, 93*. Szechuan: Tatsienlu, *E.H.Wilson 2633, 2634*, June, 1908; Fang Hsien, *Wilson 2636, 2635*. August, 1908; Mt. Omei, *W. P. Fang 3054, 2995, 2984, 3055; Faber 1069;* Hanynon Hsien, *P.W.Fang 4779;* Hon-ya, O-shan, *W. P. Fang 6445, 6665*. Hupeh: *Henry 5654*. Yunnan: Lickiang, *C. Schneider 2685; G.Forrest 15556; Henry 9893, 10087A. Hancock 93; Maire 2779;* Sungwei, *G. Forrest 295; Delavay 10* (1883).

Tibet: Yatung, *Hobson* (1897),

A common fern in the above localities and generally considered by authors as *Polypodium lineare*, from which it differs in rufo-brown, ovate-acuminate rhizome scales, which are reticulate with rather clear, large luminae except the centre being dark-colored, and in thick coriaceous leaves of a pale green color and attached to the wide-creeping rhizome at greater distance.

Plate 75. Fig. 1. habit sketch (natural size). 2. peltate paraphysis from a sorus (×50). 3. scales from rhizome (×50).

第 七 十 五 圖

扭 瓦 葦（水龍骨科）

LEPISORUS CONTORTUS (Christ) Ching

地下莖匍匐甚廣；端部鱗片密生，緊覆，卵形漸尖頭，紅褐色，邊緣具齒，網眼狹長，透明，惟位於中央者不透明；葉疏生，長十五至四十粉，寬約一粉，狹披針形，光滑，革質，綠色；子囊羣卵形，位於中肋及葉邊之間。

分布： 陝西，四川，湖北，雲南及西藏。

本種爲中國西部及西北部極普通之蕨種，昔人概認爲瓦葦，然其莖鱗呈紅褐色，短而寬，網眼惟位於中央者不甚透明；葉疏，綠色，故易於識別。

圖註： 1. 本種全形（自然大）， 2. 着生於子囊羣上之楯形鱗片（放大五十倍）， 3. 莖上之鱗片（放大五十倍）。

LEPISORUS CONTORTUS (Christ) Ching

扭　瓦　葦

C. R. Feng Del. et Lith.

PLATE 76

LEPISORUS THUNBERGIANUS (Kaulfuss) Ching

POLYPODIACEAE

LEPISORUS THUNBERGIANUS (Kaulfuss) Ching, Bull. Fan Mem. Inst. Biol. **4:** 88 (1933).

Pleopeltis Thunbergiana Kaulfuss, Wesen. d. Farrnke. 113 (1827).

Polypodium lineare Thunberg (non Burm. 1768, nec. Houtt. 1783), Fl. Jap. 335 (1784), Iconogr. Fl. Jap. 11. t. 9 (1794); Baker in Hooker, Syn. Fil. 354 (1868), pro parte; C. Chr. Ind. Fil. 540 (1906), pro parte; Ogata, Ic. Fil. Jap. **2:** pl. 86 (1929).

Pleopeitis linearis Moore, Ind. Fil. 346 (1826); Bedd. Handb. Ferns Brit. Ind. 346 (1883).

Pleopeitis nuda Hooker, Journ. Bot. (1875) 355 (non 1823).

Rhizome rather thick, creeping, densely scaly; *scales* atratous, rigid; opaque, linear-subulate from a broadly ovate base, dark-colored, except the broad margin of the base being hyaline with clear, elongate luminae with thin walls; *frond* rather approximate, 10-18 cm long, 1-1.5 cm broad, Iinear-lanceolate, acuminrte, gradually attenuate to a short stipe; *texture* coriaceous, color obscure; *sori* large, rounded, nearer to the costa than to the margin, close or almost contiguous at maturity.

Kiangsi: Kiukiang, *David 837* (1867). Kwei-chow: Van-ching Shan, *Y. Tsiang 7848;* Pin-fa, *Cavalerie 2179,* Fukien: Amoy, *Swinhoe* (1870); Foochow *Alexander* (pro parte); Ku-shan, *H. H. Chung 3772.* Chekiang; Tien-tai Shan, *H. H. Hu 282* (1920); *C. Y. Chiao 14391, 14203* (1927); Hangchow, Fan Chiao, *R. C. Ching 3865.* Kwangtung: Lungtau Shan, *C. C. C. 12051;* Tsiang-liang Shan, *McClure 6722;* Lockchong, *N. K. Chun 43006, 42557;* Lohfau Shan, *140* ex Herb. Hongkong; Swatow, Thai-yong, *Dalziel,* July, 1910; Kwangsi: Yao Shan, *Sin & Whang 190,* on recks; San-fang, Tang-loo, *R. C. Ching 5675* (1928); Sch-fang Dar Shan, *R. C. Ching 7865.* Szechuan: Mapien Hsien, *W. P. Fang 206;* ibid. *W. P. Fang 1769.* Hainan: *Hancock 111* (Kew No.). Kiangsu: Fen-whang Shan, *C. G. Matthew,* June 1, 1904; *Carles 416,* Oct. 1881; Wusih, Wei-shan, *R. C. Ching 3436* (1927); I-shing, *Y. L. Keng 2444.* Anwhei: Whang Shan *A. N. Steward 7194; S. S. Chien 1067; R. C. Ching 8532; K. K. Chow* (1925).

Type from Japan. A common fern in the eastern and southeastern part of China as well as Japan, Quelpaert, Formosa and the Philippines. Its previous report by authors from Manchuria, northern Korea and North China proves to be a mistake for *L, ussuriensis* (Regel et Maack). The specimens so-called *Polypodium lineare* from western and northwestern China should for the most part be referred to *L. contortus* (Christ).

Plate 76. Fig. 1. habit sketch (natural size). 2. peltate paraphysis from a sorus (×50). 3. scale from rhizome (×50)

第 七 十 六 圖

瓦 葦 (水龍骨科)

LEPISORUS THUNBERGIANUS (Kaulf.) Ching

地下莖頗肥，橫生；鱗片密生，黑色，質厚，狹披針形，基部卵圓形，網眼不透明，惟向邊則爲透明，具鋸齒；葉頗密生，長十至十八糎，寬一至一·八糎，狹披針形，柄極短或無，革質，色黝黃；子囊羣大而圓，接近。

分布： 中部及東南部各省，日本，台灣；菲列濱羣島亦產之。

本種最初在日本發現，現則中國東南各省均產之；其產於中國北部，東三省，朝鮮及西比利亞東部，昔人認爲卽爲本種者，當爲另一種，卽烏蘇里瓦葦是也。

圖註： 1. 本種全形（自然大）， 2. 着生於子囊羣上之楯形鱗片（放大五十倍）， 3. 莖上之鱗片（放大五十倍）。

LEPISORUS THUNBERGIANUS (Kaulf.) Ching

瓦　葦

C. R. Feng Del. et Lith.

PLATE 77

LEMMAPHYLLUM SUBROSTRATUM (C. Chr.) Ching

POLYPODIACEAE

LEMMAPHYLLUM SUBROSTRATUM (C. Chr.) Ching, Bull. Fan Mem. Inst. Biol. **4:** 97 (1933).

Polypodium subrostratum C. Chr. Ind. Fil. 567 (1906); Takeda, Notes, R. Bot. Gard. Edinb. **8:** 311 (1915).

Polypodium rostratum Hooker (non Burm. 1768, nec Cav. 1802), Ic. Pl. t. 953 (1854); A Cent Ferns t. 53 (1854); Hayata, Ic. Pl. Form. **4:** 253 f. 177 (1914).

Pleopeltis rostratum Bedd. Ferns Brit. Ind. t. 159 (1866); Handb. Ferns Brit. Ind. 345 (1883).

Rhizome slender, wide-creeping generally on the trunk of trees, greenish, sparcely scaly; *scales* thin, clathrate, fusco-brown, lanceolate-subulate from a rounded base provided with a few large teeth or protruding arms; *frond* far apart, short-lanceolate, 6-10 cm long, 2-2.5 cm broad, apex rostrate, gradually attenuate to the short stipe, often subdimorphous, fertile one being longer and narrower; *texture* carnoso-subcoriaceous, naked, color pale green; *venation* more or less distinct at least under light; *sori* medium-sized, distinct or rarely two imperfectly fused.

Kwangtung: Lockchong, *Y. K. Wang 31446, 42270;* Lohfau Shan, *83* ex Herb. Hongkong (1883); *S. P. Ko 50074;* Yingtak, *C. G. Matthew*, April 7, 1907; Lungtau Shan, *C. C. C. 12531;* North River, *C. L. Tso 21114.* Yunnan: Mengtze, Henry *10448, 13302; Hancock 181;* Keng Hung, *J. F. Rock 2690;* Ku-long-tchang, *E. E. Maire,* Kweichow: Cheng-feng, *Y. Tsiang 4793;* Yaoren Shan, Sanhoa, *Y. Tsiang 6305;* Yingkiang, Tu-shan, *Y. Tsiang 6716* (f. typica). Kwangsi: *Sin & Whang 46* (1926); Yao Shan, *Sin & Whang 7* (1928); Yao-mar Shan, Lin Yen, *R. C. Ching 7006, 7104;* Chu-feng Shan, San-fang, *R. C. Ching 5807* (f. typica).

A common fern, generally epiphytic on the trunk of trees in deep ravines under forests. A transitional species from *Lepisorus* to *Lemmaphyllum.*

Plate 77. Fig. 1. habit sketch (natural size). 2. peltate paraphysis from a sorus (×50). 3. scale from rhizome (×50).

第 七 十 七 圖

骨 牌 蕨 (水 龍 骨 科)

LEMMAPHYLLUM SUBROSTRATUM (C.Chr.) Ching

地下莖細長，匍匐於樹幹上，綠色；鱗片疏生，深褐色，基部圓形具粗大蹏齒，上部狹披針形，全緣，葉疏生，長六至十粉，寬二至二·五粉，闊披針形，柄短，葉端呈嘴形，有時亞二形，肉質，光滑，淡綠色，葉脈不顯；子囊羣中大，分離或向葉端爲不規則之接合。

分布： 香港，廣東，貴州，廣西，雲南；交趾，安南，緬甸，喜馬拉亞山，台灣。

本種爲附生於老林中樹幹上之小形蕨種，在其分布區內，頗爲普通。

圖註： 1. 本種全形(自然大)， 2. 着生於子囊羣上之楯形鱗片(放大五十倍)， 3. 莖上之鱗片(放大五十倍)。

LEMMAPHYLLUM SUBROSTRATUM (C. Chr.) Ching

骨　牌　蕨

C. R. Feng Del. et Lith.

PLATT 78

LEMMAPHYLLUM ADNASCENS Ching

POLYPODIACEAE

LEMMAPHYLLUM ADNASCENS Ching, Bull. Fan Mem. Inst. Biol. **4:** 101 (1933).

Rhizome slender, wide-creeping, 1 mm thick, sparcely scaly; *scales* ovate, acuminate, fuscous, coarsely clathrate, denticulate; *frond* distant, strongly dimorphous, the sterile 8-11 cm long, below 2 cm broad, ligulate or oblanceolate-ligulate, obtuse, gradually attenuate to a short stipe; *texture* thickly carnose, pale green, scaly on both surfaces; *venation* completely hidden; *fertile frond* much contracted, narrowly linear-elongate, to 10 cm or longer, below 1 cm broad, underside densely scaly; *sori* large, oblong-ovate, filling up the space between the midrib and margin, which latter sometimes appears wavy, due to the protruding sori.

Szechuan merid: Kuan Hsien, *F. T. Wang 20691.* Type in Herbarium of the Fan Memorial Institute of Biology and, of the Biological Laboratory of the Science Society of China.

A remarlable fern and perhaps the largest of the genus, not expected at all at such a late date from a region, where the botanical exploration has supposedly been carried out intensively over half a century. Evidently a rare fern in the locality, only two good specimens being collected. Its affinity to *L. drymoglossoides* (Baker) is clear enough, differs chiefly in much larger size, thicker and much harder texture, densely scaly under surface, in rhizome scales of different outline and sori being of much larger size, completely filling up the space between the midrib and margin.

Plata 78. Fig. 1. habit sketch (natural size). 2a. portion of a fertile leaf, showing venation (×2). 3a-b. peltate paraphyses from a sorus (×50). 4a-b. scales from underside of a leaf (×50). 5. scale from rhizome (×50).

第 七 十 八 圖

川 石 蓮(水龍骨科)

LEMMAPHYLLUM ADNASCENS Ching

地下莖細長橫生；鱗片疏生，卵形，漸尖頭，黝色，具小鋸齒；葉疏生，葉間距離大，二形，其非子囊羣葉長八至十一粉，寬不及二粉，舌形或倒披針狀舌形，鈍頭，厚肉質，淡綠色，遍體被鱗片，葉脈不顯；子囊羣葉爲細長線形，長達十五粉或過之，寬不及一粉，下面密生鱗片，子囊羣大，橢圓形，常突出於葉邊外。

分布： 四川中部之灌縣，模式標本在靜生生物調查所，副本標本在中國科學社生物研究所。

本種爲特殊之一種，其形體同於抱石蓮，然各部之大，則遠過之，且葉體鱗片密生，子囊羣爲大橢圓形，常突出於葉邊外。按川省植物，在最近五十年內，幾經採集，今復發現如此特殊新種，則其富藏之未盡也明矣。

圖註： 1. 本種全體（自然大)， 2a. 子囊羣葉之一部，表示其葉脈及子囊羣之位置（放大四倍)， 2b. 非子囊羣葉之一部，表示其葉脈(放大二倍)； 3a-b. 着生於子囊羣上之楯形鱗片(放大五十倍)， 4a-b. 葉體下面之鱗片(放大五十倍)， 5. 莖上之鱗片(放大五十倍)。

LEMMAPHYLLUM ADNASCENS Ching

川　石　蓮

C. R. Feng Del. et Lith.

PLATE 79

LEMMAPHYLLUM DRYMOGLOSSOIDES (Baker) Ching

POLYPODIACEAE

LEMMAPHYLLUM DRYMOGLOSSOIDES (Baker) Ching, Bull. Fan Mem. Inst. Biol. **4:** 100 (1933).

Polypodium drymoglossoides Baker, Journ. Bot. (1887) 170; Diels in Engl. Jahrb. **29:** 204 (1901); Christ, Bull. Acad. Géogr. Bot. (1902) 206 c. fig; C. Chr. Ind. Fil. 523 (1906); Takeda, Notes, R. Bot. Gard. Edinb. **8:** 302 (1915); Hand-Mzt. Symb. Sinic. **6:** 42 (1929); C. Chr. Dansk Bot. Archiv. **6:** 47 pl. V. f. 8-9 (1929).

Polypodium moupinense Franchet, Nouv. Archiv. Mus. II. **10:** 121 (1887); Christ, Bull. Acad. Géogr. Bot. (1906) 105.

Polypodium cyclophyllum Baker, Ann. Bot. **5:** 473 (1891); C. Chr. Ind. Fil. 520 (1906).

Rhizome slender, wide-creeping, greenish, sparcely scaly; *scales* light-brown, thin, coarsely clathrate, subulate from a broad, irregularly branched base; *frond* subdimorphous, distant, the sterile orbicular-ovate to oblong-ovate, 1-2 cm long, pale green, carnose, furnished with a few appressed scales on the underside; *venation* obscure even under light; *fertile frond* generally spathulate, 3-6 cm long, below 1 cm broad; but not infrequently almost similar to the sterile in outline; *sori* medium-sized, distinct, or not infrequently the upper ones imperfectly fused.

Hupeh: Ichang, *A. Henry 1576* (type); Nanto, *Henry 2965, 4892, 5963;* Changyang, *E. H. Wilson 1450, 2647.* Anwhei: Sui-nin, *K. K. Tsoong 4530,* 117. Szechuan: Moupin, *David; Henry 7532A;* Mt. Omei, *Faber 1046; E. H. Wilson 5314; W. P. Fang 5735;* O-shan, *W. P. Fang 8000* (1930); Hon-ya, *W. P. Fang 8747* (1930). Chekiang: Tien-tai Shan, *C. Y. Chiao 14719,* August, 1927; Bunji islank, *C. G. Matlhew,* Sept. 30, 1907; Ningpo, *Hancock 32* (1877). Kiangsu: Soo-chow, Lin-yin Shan, *C. G. Matthew,* June 4, 1904; Wusih, Wei Shan, *R. C. Ching 3430* (1927); I-shing, *R. C. Ching & C. L. Tso 544;* Nanking, Tsihsia Shan, *Chen 196.* Kweichow: Pin-fa, *Cavalerie 627;* Gaotsha, *Handel-Mazzetti 10261;* Van-ching Shan, *Y. Tsiang 7619, 7748,* 7952; Anlung, *Y. Tsiang 9346, 7409;* Tungtze, *Y. Tsiang 5174, 4936;* Houang-tsao-pa, *Cavalerie 7051,* May, 1919. Hunan: Hsikwang Shan, *Handel-Mazzetti.*

A very unstable fern as to the shape of leaves and conditions of sori, which both in some extreme forms appear hardly distinguishable from its relative, *L. microphyllum* Presl, species inhabiting a more southern area.

Plate 79. Fig. 1. habit sketch (natural size). 2a. fertile leaf (×2). 2b. sterile leaf (×3). 3. peltate paraphysis from a sorus (×50). 4. scale from rhizome (×50).

第 七 十 九 圖

抱 石 蓮 (水龍骨科)

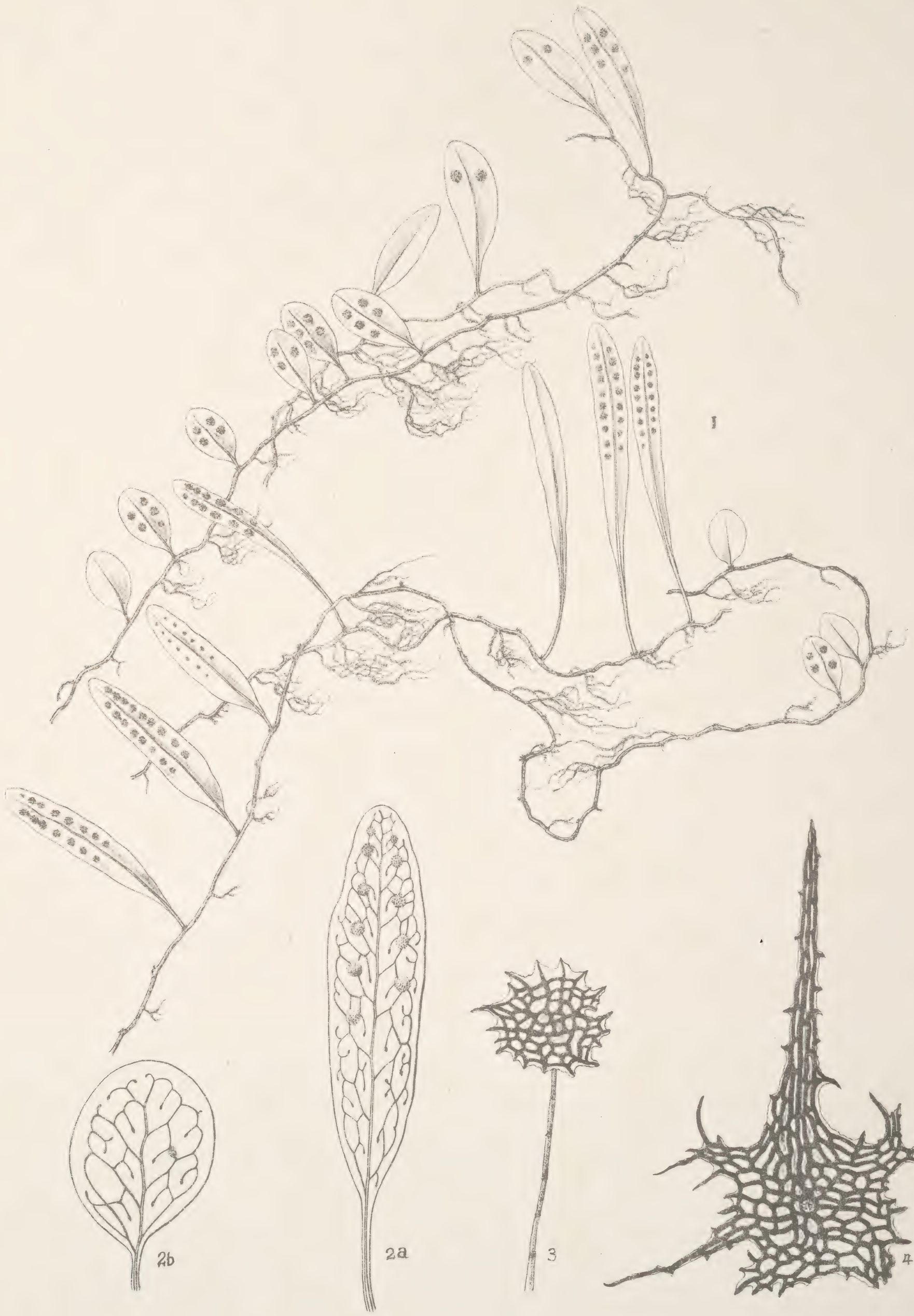
LEMMAPHYLLUM DRYMOGLOSSOIDES (Baker) Ching

地下莖細長如銅絲，附生於石上，綠色；鱗片疏生，黃褐色，質薄，細長，基部寬而不規則分叉；葉疏生，亞二形，非子囊羣葉爲卵圓形或卵橢圓形，長約一至二粉，色淡綠，肉質，下面鱗片疏生，葉脈不顯，子囊羣葉細長如舌形或匙形，長三至六粉，寬不及一粉；子囊羣中大，分離或向葉端爲不規則之接合。

分布： 湖北，安徽，四川，浙江，江蘇，貴州，河南，生於陰濕石壁上。

本種之葉形及子囊羣變異甚大，其在極端情形下者，頗類南方温熱帶之抱樹蓮。

圖註： 1. 本種全形(自然大)， 2a. 子囊羣葉(放大二倍)， 2b. 非子囊羣葉(放大三倍)； 3. 着生於子囊羣上之楯形鱗片(放大五十倍)， 4. 莖上之鱗片(放大五十倍)。



LEMMAPHYLLUM DRYMOGLOSSOIDES (Baker) Ching

抱　石　蓮

C. R. Feng Del. et Lith.

PLATE 80

LEMMAPHYLLUM MICROPHYLLUM Presl

POLYPODIACEAE

LEMMAPHYLLUM MICROPHYLLUM Presl, Epim. Bot. 263 (1849); C.Chr. Dansk Bot. Archiv. **6:** 46 pl. V. f. 1-4 (1929); Ching, Bull. Fan Mem. Inst. Biol. **4:** 102 (1933).

Drymoglossum carnosum Hooker (non J. Sm.), Kew Journ. Bot. **9:** 358 (1857); Benth. Fl. Hongk. 444 (1861).
Pteris piloselloides Thumberg (non Linnaeus), Fl. Jap. 331 (1784).
Drymoglossum carnosum var. *obovatum* Harr. Journ. Linn. Soc. **16:** 33 (1867).
Drymoglossum microphyllum C. Chr. Ind. Fil. 246 (1906); Ogata, Ic. Fil. Jap. **4:** pl. 164. (*f. typica*); l. c. pl. 166 (var. *obovatum*) (1931).
Drymoglossum carnosum var. *subcordatum* Baker in Hooker, Syn. Fil. 397 (1868).
Drymoglossum obovatum Christ, Journ. de Bot. France **19:** 73 (1905).

Rhizome wiry, wide-creeping generally on the trunk of trees, greenish, sparcely scaly; *scales* thin, clathrate, light-brown, entire, subulate from a broad, lacerato-fimbriate base; *frond* dimorphous, the *sterile* mostly orbicular with rounded or subcordate base (f. *typica*), or ovateor broadly obovate with shortly cuneate base (var. *obovatum*), 5-15 mm broad, surfaces naked or with a few brown, ovate, clathrate scales; *texture* carnose (in fully grown leaves), or submembranaceous (when young), color pale green, but obscurely brown or even blackish when dried; *venation* not distinct, rather regularly reticulate and looped some way below the thin, plane margin, meshes provided each with one simple, recurrent, clavate veinlet; *fertile frond* strongly contracted, ligulate, 2-3 mm broad, 3-4 cm long including the short stipe; *sori* linear, medial, densely scaly, laterally broadened at maturity; *spores* subreniform. pellucide, smooth.

Fukien: Kulliang Hill near Foochow, *J.B. Norton 1085;* Yuan-shan, *H.H. Chung 1202.* Kwangtung: Lockchong, *C.L. Tso 20371;* Canton, *Hance 31;* Ting Woo Shan, *Karl Buswell 6332.* Kwangsi: Yao Shan, *S. S. Sin & K. K. Whang 1512B;* Lungchow, *Morse 68.* Hongkong: *C. Wright, Bowring, C. Wilford 332.* Hupeh: Ichang Gorge, *Maires* (1880).

Also Japan, Korea, Liu-kiu islands and Formosa.

Type from Japan, first collected by Thunberg and named *Pteris piloselloides* by himself. A very variable fern as to the shape of sterile leaves; in some extreme forms it approaches *L. drymoglossoides* (Baker) so closely that it can be distinguished from thə latter species with difficulty, as already pointed out by Dr. Christensen in his recent critical work on the genus. In typical form, the sterile fronds orbicular, rounded or cordate at base; in var *obovatum* (Harr.), they are obovate or ovate, shortly cuneate at base on rather long petioles. *Drymoglossum Nobukoanum* Makino, Journ. Jap. Bot. **7:** 8 (1931), now to be called **LEMMAPHYLLUM NOBUKOANUM** (Makino) Ching, comb. nov. from Formosa seems to be specifically distinct from *var. obovatum* by slender, small, spothulate sterile fronds and almost linear fertile ones on long, wiry stipes (cf. Ogata, Ic. Fil. Jap. pl. 165. 1931).

Plate 80. Fig. 1. habit sketch (natural size). 2. peltate paraphysis from a sorus (×50). 3. scale from rhizome (×50). 4. sterile frond, showing venation (×3).

第 八 十 圖

抱樹蓮(水龍骨科)

LEMMAPHYLLUM MICROPHYLLUM Presl

地下莖細長，匍匐於樹幹上，綠色；鱗片疏生，黃褐色，基部圓形，不規則分叉，上部細長，全緣；葉二形，非子囊羣葉爲圓形或卵圓形，基部圓形，或心臟形或楔形，肉質，淡綠色，全體光滑或鱗片疏生，葉脈不顯，在強光下可見，爲有規則之網狀；子囊羣葉細長，舌形，長三至四粉，寬約二至三糎；子囊線形，一列，位於葉邊與中肋之間，成熟後張開。

分布：福建，廣東，廣西，香港，湖北；日本，台灣，琉球羣島及朝鮮南部亦產之。

本種最初發現於日本，其葉形變異甚大，在極端情形之下，幾與抱石蓮無異。

圖註：1. 本種全形(自然大)，2. 着生於子囊羣上之楯形鱗片(放大五十倍)，3. 莖上之鱗片(放大五十倍)，4. 非子囊羣葉，表示其葉脈(放大三倍)。

LEMMAPHYLLUM MICROPHYLLUM Presl

抱樹蓮

C. R. Feng Del. et Lith.

PLATE 81

CYCLOPHORUS CALVATUS (Baker) C. Christensen

POLYPODIACEAE

CYCLOPHORUS CALVATUS (Baker) C. Christensen, Ind. Fil. 198 (1905).

Polypodium calvatum Baker, Journ. Bot. (1879) 304.
Niphobolus calvatus Diels in Engl. Jahrb. **29:** 207 (1901).
Polypodium stigmösum Christ (non Swartz) in Warburg, Monsunia **1:** 62 (1900).

Rhizome thick, oblique, rather short-creeping; densely scaly; *scales* ferruginous, spreading, linear-lanceolate, fimbriate; *frond* caespitose, several together, stipe 5-9 cm long, thick, when young densely clothed in loose, long-armed articulated but deciduous fine hairs, lamina lanceolate, 20-30 cm long, 2-2.5 cm broad, gradually narrowed downward, apex acuminate, margin entire; *texture* thick coriaceous, color clear light-green, pitted above and with a few fine but deciduous stellate hairs, thinly subfurfuraceous with gray, wooly, stellate hairs beneath, but becomes perfectly glabrous at last; lateral *main veins* rather distinct in the lower part; *sori* confined to the upper one-third, sparcely intermixed with wooly hairs, rounded, distinct, or sometimes imperfectly fused, arranged in 3-5 distinct rows between lateral main veins.

Kwangtung: North River, *C. Ford* (type), May, 1875; Lien Hsien, *C. G. Matthew*, December 2, 1907; *S. P. Ko 51035; W. Y. Chun 5563.* Kweichow: Tungtze, *Y. Tsiang 5099;* Tseh-heng, *Y. Tsiang 9249;* Cheng-feng, *Y. Tsiang 4523;* Tin-fa, *Cavalerie.* Szechuan: Mt. Omei, *E. Faber 1049; A. Henry 5570;* Nanchuan, *von Rosthorn 1721, 1723, 1708;* Moupin, *David.* Hupeh: Nanto, *A. Henry 4024; E. H. Wilson 2671.* Yunnan: Mengtze, *A. Henry 9834; Hancock 52;* Pa-eul-gai, *E. E. Maire,* Sept. 1916.

A pretty and distinct fern, with which *C. subfurfuraceus* (Hook.) from the Himalayas is perhaps the only close ally, which differs in much larger dimension, persistent, thicker, gray wooly hairs on the underside of lamina and in frond of a different color.

Plate 81. Fig. 1. habit sketch (natural size). 2. portion of a lamina, showing venation (×2). 3. scales from the base of a stipe (×50). 4. branched hair from stipe (×30). 5. sporangium (×50).

第 八 十 一 圖

光 石 葦 (水 龍 骨 科)

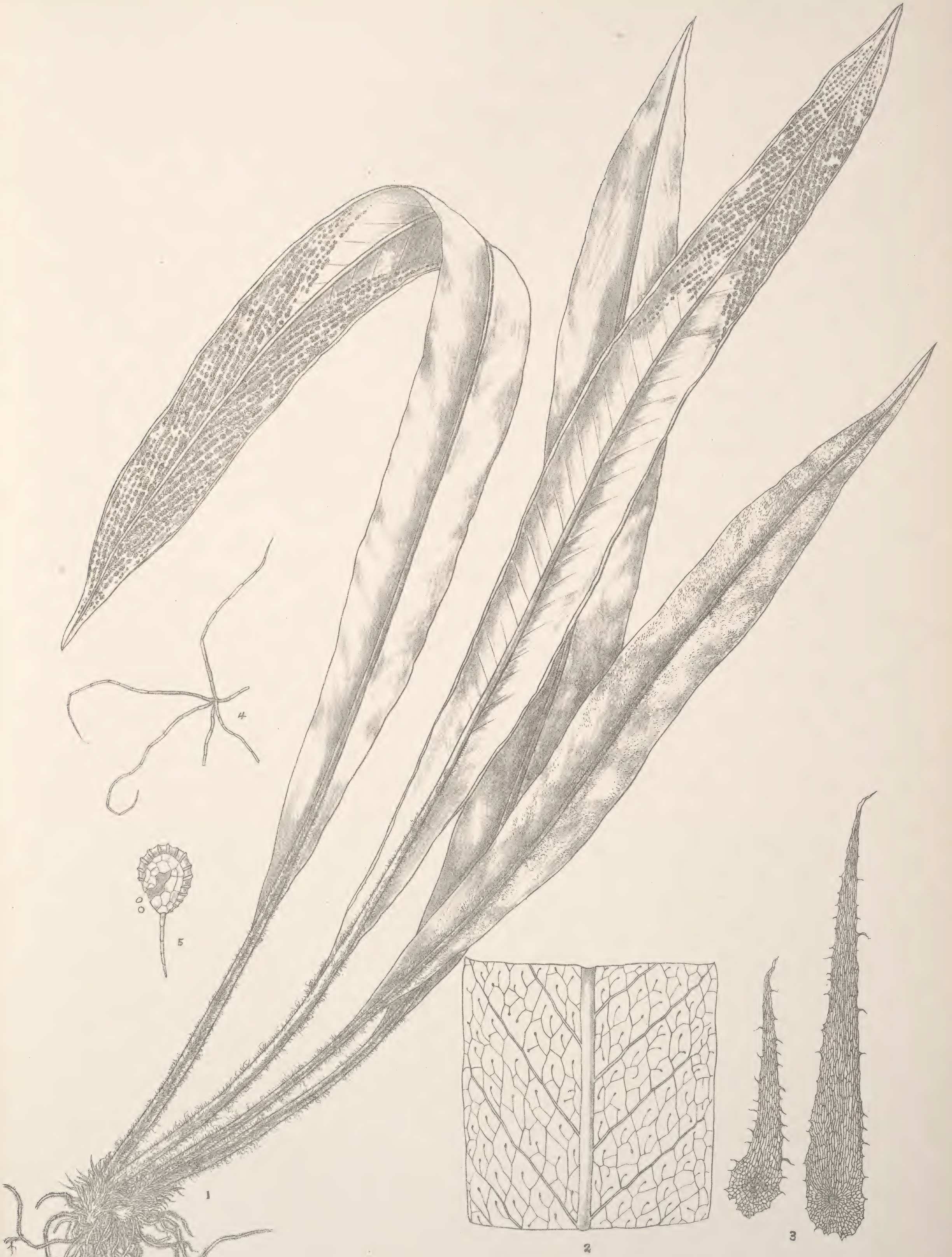
CYCLOPHORUS CALVATUS (Baker) C. Christensen

地下莖肥大，短而橫生；鱗片密著，銹黃色，線披針形，邊緣具細長齒，上部開張；葉簇生，柄長五至九粉，幼時被細長節狀星芒形之鬆毛，漸次脫落，終變爲光滑，葉體披針形，長二十至三十粉，寬二至二·五粉：基部漸狹，端部漸尖，全緣，厚革質，光綠色，上面多小孔且具疏生之星狀細毛，久則脫落，下面初具灰白色之星狀絨毛，終變爲光滑，側脈頗顯明；子囊羣著生於葉體之端部，圓形，於兩側脈之間成三至四列，明白可識，幼時具灰白色星狀細絨毛，終爲光滑。

分布： 廣東北江，貴州，四川，雲南，湖北，江西。

本種爲本屬特殊之種，易於識別，與此相近者厥惟絨毛石葦 (C. subfurfuraceus C. Chr.)，產於西京喜馬拉亞山及雲南，然其體形較大，葉下面之厚絨毛終不脫落，故異於本種。

圖註： 1. 本種全形（自然大）， 2. 葉體之一部，表示其葉脈（放大二倍）， 3. 葉柄基部之鱗片（放大五十倍）， 4. 葉柄上之星芒狀鬆毛（放大三十倍）， 5. 子囊（放大五十倍）。



CYCLOPHORUS CALVATUS (Baker) C. Christensen

光　石　葦

C. R. Feng Del. et Lith.

PLATE 82

ELAPHOGLOSSUM MCCLUREI Ching

POLYPODIACEAE

ELAPHOGLOSSUM MCCLUREI Ching, Sinensia **I**: 55 (1930).

Rhizome short, oblique, densely scaly; *scales* brown, broadly lanceolate, acuminate, margin sparcely fimbriate, texture rather thick; *frond* subcaespitose, several together, dimorphous, the fertile ones somewhat longer than the sterile, stipe of sterile frond 4 cm long, that of the fertile over 10 cm long, straminous, densely scaly; lamina of sterile rond 10-14 cm long, to 3 cm broad, lanceolate-ligulate, apex obtuse, base shortly attenuate; *texture* thick coriaceous, color pale green, underside rather densely clothed with brown, appressed, branched hairs, upperside naked; margin plane, narrowly hyaline, midrib broadened, slightly raise above; *veins* completely hidden; *fertile* lamina to 10 cm long, 1.5 cm broad, lanceolate, apex acute, margin narrowly reflexed; *sori* obscure brown, dense, covering the entire underside except the midrib; *spores* opaque, ovoid, coarsely crested.

Hainan: Hung Mo Tung, *F. A. McClure 18257*, August 22, 1929, summit of highest peak, on mossy trunk of forest tree, 6,000 ft. alt.; on route from Dung Ka to Win Fa Shi, *C. L. Tso & N.K. Chun 43729*, August 26, 1932, on rocks in thickets, 1,700 ft. alt.

This is closely related to *E. austro-sinicum* Matthew et Christ from the mainland (Kwangtung), differs in much smaller size, rigid texture, ligulate sterile frond with obtuse apex and short-attenuate base provided with longer and thinner stipe, and fertile frond being longer than the sterile.

Plate 82. Fig. 1. habit sketch (natural size). 2. portion of a sterile frond, showing venation (natural size). 3. scale from rhizome (×30). 4. branched hairs from the underside of a frond (×80). 5. sporangium (×250).

第 八 十 二 圖

瓊崖舌蕨(水龍骨科)

ELAPHOGLOSSUM MCCLUREI Ching

地下莖短，半直立；鱗片密生，黃褐色，闊披針形，漸尖頭，邊緣具睫毛；葉簇生，二形，非子囊羣葉每簇三至五個，柄長約四粉，稻桿色，同樣之鱗片密生，葉體披針狀舌形，鈍頭，下部漸狹，長十至十四粉，寬達三粉，堅革質，淡綠色，下面遍被黃褐色之鱗片，全緣平薄，角質，透明，側脈不見，中肋下面扁平，被鱗片；子囊羣葉稍狹，柄長過十粉，葉體長約十粉，寬僅一·五粉，披針形，急尖頭，邊緣稍反捲。子囊羣密布葉之下面，僅中肋可見耳。

分布： 瓊洲島。

本種爲瓊洲島特產，其形體頗似廣東本部所產之 E. austrosinicum Matthew et Christ，然其形體較小，葉質較堅，子囊羣葉較非子囊羣葉爲長，非子囊羣葉舌形，鈍頭，基部楔形，柄長而瘦，得以識別。

圖註： 1. 本種全形(自然大)， 2. 非子囊羣葉之一部，表示其葉脈(自然大)， 3. 莖上之鱗片(放大三十倍)， 4. 葉下面之腺狀鱗片(放大三十倍)， 5. 胞子囊(放大一百五十倍)。

ELAPHOGLOSSUM MCCLUREI Ching

瓊 崖 舌 蕨

C. R. Feng Del. et Lith.

PLATE 83

MISCROSORIUM FORTUNI (Moore) Ching

POLYPODIACEAE

MICROSORIUM FORTUNI (Moore) Ching, Bull. Fan Mem. Inst. Biol. **4:** 304 (1933).

Drynaria Fortuni Moore, Gard. Chron. (1885) 708.
Polypodium Fortunii Lowe, Ferns Brit. & Exot. **I:** t. 42B (1856); Takeda, Notes. R. Bot. Gard. Edinb. **8:** 284 (1915), quoad plant. ex China et Formosa; C. Chr. Ind Fil. Suppl. 54 (1913-17).
Polypodium chinense Mett. apud Kuhn in Seemann's Journ. Bot. **6:** 270 (1868); Christ, Bull. Herb. Boiss. ser. 2. **4:** 611 (1904).
Polypodium Henryi Christ, Bull. Herb. Boiss. **6:** 873 (1898).
Polypodium austro-sinicum Christ in C. Chr. Ind. Fil. 512 (1906, non Christ, Bull. Acad. Géogr. Bot. 1906).
Polypodium mengtzeanum Baker, Kew Bull. (1906) 14; C.Chr. Ind. Fil. Suppl. 60 (1906-12).
Polypodium simplex var *Esquirolii* Christ, Bull. Acad. Géogr. Bot. (1906) 247.
Polypodium normale Christ (non Don, 1825), Bull. Soc. Bot. France **52:** Mém. 1. 16 (1905); Dunn et Tutcher, Fl. Hongk. & Kwangt. 352 (1912); Ogata, Ic. Fil. Jap. **2:** pl. 89 (1929).
Polypodium normale var. *polysorum* Baker, Journ. Bot. (1875) 202.
Polypodium lineare Hk. et Bak. Syn. Fil. 354 (1868), partim.

Rhizome scandent, greenish, subglabrous; *scales* rather sparce at the base of stipe, or on the growing tip, brown, ovate, acute, erosed, concolorous, thin, fallen off at last; *frond* uniseriate, about 1.4 cm apart, erect, narrowly linear-lanceolate to broadly linear-lanceolate, 1.5-5 cm broad, 30-45 cm long, including the short, wingless stipe, gradually attenuate to both ends, entire; *texture* subcoriaceous, light green, more or less wrinked when dried; *veins* obscure; *sori* large, orange-yellow, uniseriate and far apart in the narrow-leaved forms (f. *typica*), but irregularly 1-2-seriate in the broader forms, closer to the costa, leaving a broad sterile margin, naked from the beginning.

Common in the Yangtze Valley and extending southwardly to Kwangtung as well as the island Formosa and Japan.

Type from the island Chusan (leg. Fortune) and represents a very narrow-leaved form, which appears so similar in general outline to the large form of *Polypodium lineare* Thunberg, that it was subsequently reduced to that species by Hooker and Baker. *P. chinense* Mett. is partly based upon Fortune's plant and partly upon the plant collected by De Griji from Foochow, Fukien, which latter represents a broad leaved form common in South and Southwestern China, known hitherto under half dozen other names as cited above.

Generically, this fern differs from *Lepisorus* (J. Sm.) Ching in tall scandent habit, the inherent tendency for the sori to be irregularly disposed and in the absence of the characteristic peltate scales on the sori. For over half a century, this fern has always been mistaken by authors for *Polypodium normale* Don from the Himalayas and Southwestern China, which differs, above all, in the presence on the back of the rhizome scales a large tuft of red setiform bristles.

Plate 83. Fig. 1. habit sketch (natural size). 1a. typical form; 1b. broad-leaved form. 2. portion of a frond, showing venation and sori (×3). 3. scales from rhizome (×30).

第 八 十 三 圖

福 氏 星 蕨 (水 龍 骨 科)

MICROSORIUM FORTUNI (Moore) Ching

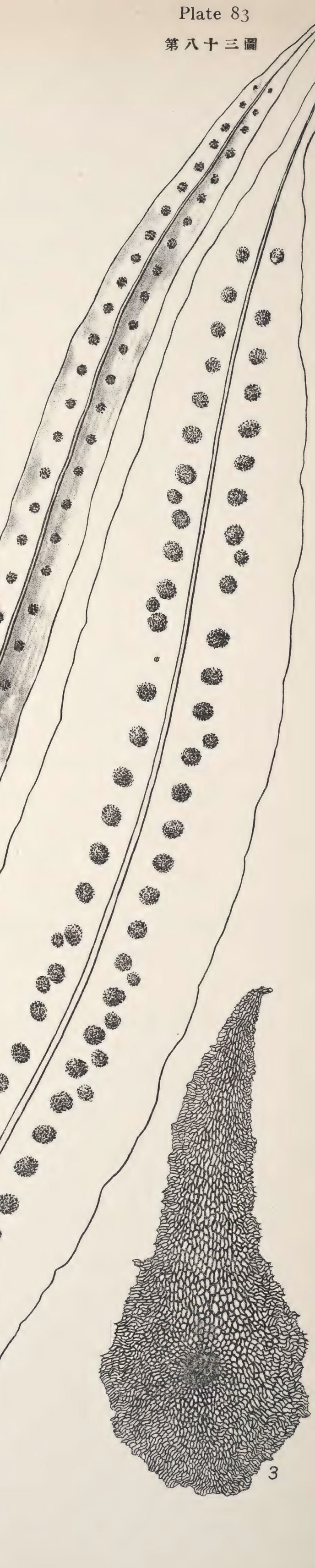
地下莖長，匍匐或攀縣，綠色，半光滑；鱗片僅疏生於葉之基部或莖之幼部，黃褐色，卵形，急尖頭，全緣，久則脫落；葉疏生，葉間距離約一·五粉，帶狀披針形或闊帶狀披針形，寬一·五至五粉，長三十至四十五粉，漸尖頭，基部漸狹，延入無翅之短柄，全緣，亞革質，淡綠色，乾則兩面起縐，葉脈不見；子囊羣形圓而大，橙色，在狹葉上者一列，距離甚大，在寬葉上者爲不規則之二列，稍貼近中肋。

分布： 長江各省均產之，南達廣東北部，東至日本及台灣等島。

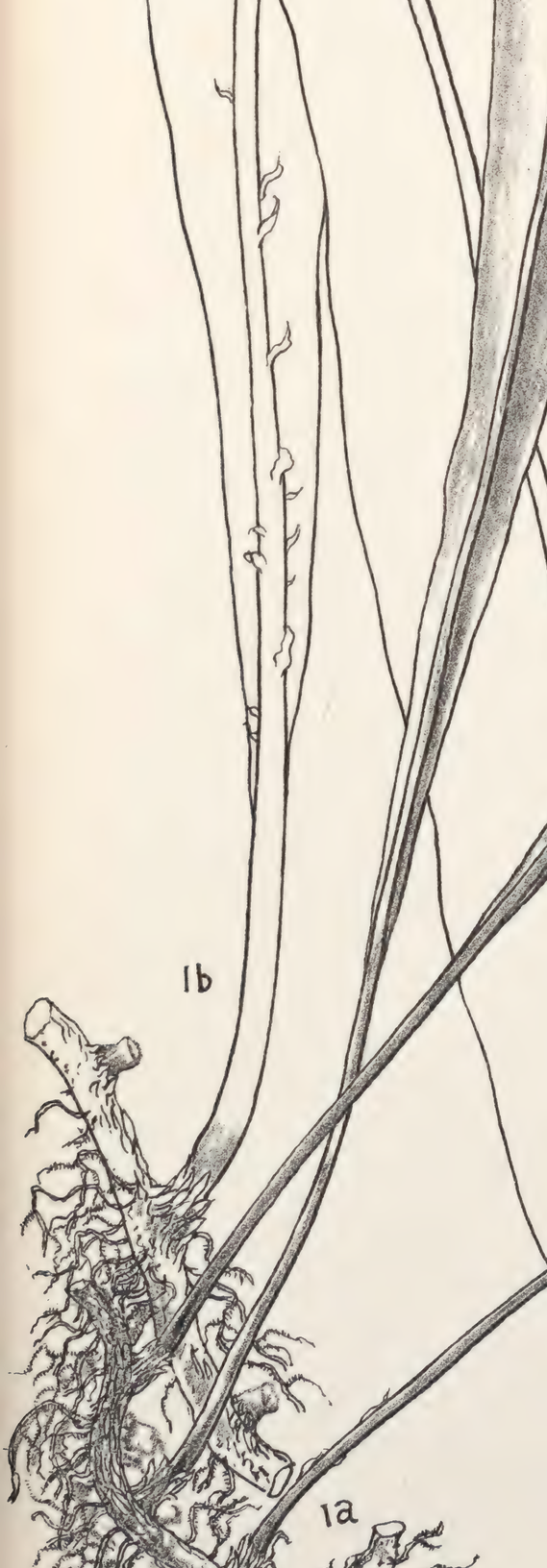
模式種產於舟山羣島，其葉細狹，子囊羣一列，形體極類瓦葦，然其莖細長，常攀縣於樹幹，其子囊羣上不被楯形透明之鱗；通常葉闊達四或五粉，子囊羣爲不規則之二列。

圖註： 1. 本種全形（自然大）：1a. 模式形，1b.闊葉形， 2. 葉之一部，表示其葉脈及子囊羣之位置(放大三倍)， 3. 莖上之鱗片(放大五十倍)。

2



3



1b

1a

MICROSORIUM FORTUNI (Moore) Ching

福　氏　星　蕨

C. R. Feng Del. et Lith.

PLATE 84

MICROSORIUM HYMENODES (Kunze) Ching

POLYPODIACEAE

MICROSORIUM HYMENODES (Kuuze) Ching, Bull. Fan Mem. Inst. Biol. **4:** 301 (1933).

Polypodium hymenodes Kunze, Linnaea **23:** 279 (1850); Mett. Fil. Hort. Lips. 37 t. 25, f. 40-41 (1856); Takeda, Notes, R. Bot. Gard. Edinb. **8:** 287 (1915); C. Chr. Ind. Fil. Suppl. 54 (1913-17).

Polypodium superficiale var. *semilinearis* Clarke, Ferns N. Ind. in Trans. Linn. Soc. ser. 2. Bot. **1.** 558 (1880).

Polypodium subhemionitideum Christ, Bull. Herb. Boiss. **7:** 5 (1899).

Rhizome scandent, more or less compressed, sparcely scaly; *scales* spreading, fusco-brown, ovate, acuminate, clathrate; *frond* far apart, variable in size, 15-30 cm long, 1.7-3 cm broad, gradually attenuate to both ends, stipe short, 3-5 cm long, margin entire, more or less wavy; *texture* herbaceous, or papyraceous, naked, color brownish-green; *veins* rather distinct; *sori* large, rounded to oblong, scattered over the entire under surface (var. *sparsiorum* Takeda), or sometimes placed near to the margin, leaving a broad sterile space on each side of costa (var. *marginale* Takeda).

Yunnan: Mengtze, *A. Henry 9265B; Hancock 98;* Tengyueh, *Forrest 9453;* Long-kang, *Delavay 4928.* Kweichow: Kwei-yang, *Bodinier 2088.* Szechuan occid: *E. H. Wilson 2633;* Kuan Hsien, *W. P. Fang 2100;* Mt. Omei, *W. P. Fang 2493.* Kwangsi: San-fang, Chu-fang Shan, *R. C. Ching 5749.*

A tall scandent fern, clinging to the trunk of trees up to 20 feet high; habit and size are exactly similar to *M. Buergerianum* (Miq.), differs in frond of thinner texture with quite visible venation, gradually attenuate base, and much larger sori. Geographically, this ferns is known only from Northern India and West China as well as Tonkin.

Plate 84. Fig. 1. habit sketch (natural size). 2. scale from rhizome (×50).

第 八 十 四 圖

滇 星 蕨 (水 龍 骨 科)

POLYPODIUM HYMENODES (Kunze) Ching

地下莖攀縣甚高，略呈扁平；鱗片稀生，開張，深褐色，卵形，漸尖頭；葉間距離甚大，形體大小不一，長十五至三十糎，寬一·七至三糎，向兩端漸尖，柄短，無翅，光滑，全緣或間呈波形，紙質，光滑，乾則呈黃綠色。葉脈頗明顯，側脈不發達；子囊羣形大，體圓或橢圓，光滑，星散於葉之下面，或間貼近邊緣而留一闊空白帶於中肋兩旁。

分布： 雲南，貴州，四川，廣西，及印度北部，交趾。

本種形體大小極類波氏星蕨(M. Buergerianum)，然其葉質較薄，葉脈頗明顯，體葉下部漸狹與較大之子囊羣，故易於識別。

圖註： 1. 本種全形(自然大)， 2. 莖上之鱗片(放大五十倍)。

MICROSORIUM HYMENODES (Kunze) Ching

瀆 星 蕨

C. R. Feng Del. et Lith.

PLATE 85

MICROSORIUM BUERGERIANUM (Miquel) Ching

POLYPODIACEAE

MICROSORIUM BUERGERIANUM (Miquel) Ching, Bull. Fan Mem. Inst. Biol. **4:** 302 (1933).

Polypodium Buergerianum Miquel, Ann. Lugd. Bat. **3:** 170 (1867); C. Chr. Ind. Fil. 514 (1906); Takeda, Notes, R. Bot. Gard. Edinb. **8:** 290 (1915).

Polypodium superficiale Hooker, Sp. Fil. **5:** 71 (1864); Syn. Fil. 355 (1868), quoad pl. ex Hongkong et Tsushima (non Blume); Ogata, Ic. Fil. Jap. **3:** pl. 145 (1930).

Polypodium hymenodes Benth. (non Wallich, 1828) Fl. Hongk. 548 (1861).
Polypodium brachylepis Baker, Gard. Chron. n. s. **14:** 494 (1880).
Polypodium ningpoense Baker, Ann. Bot. **5:** 474 (1891).
Polypodium Buergerianum var. *ningpoense* Takeda, Notes, R. Bot. Gard. Edinb. **8:** 290 (1915).

Polypodium superficiale var. *attenuata* Rosenst. in Fedde, Repert. Sp. Nov. **13:** 314 (1914).

Polypodium superficiale var. *anguinum* Christ, Bull. Soc. Bot. France **52:** Mém 1. 16 (1905).

Rhizome scandent, 2-4 mm broad, compressed, atratous, scaly; *scales* rufo-brown, thin, clathrate, ovate, acuminate, fallen off at last; *frond* 2-3 cm apart, lanceolate, 10-20 cm long, 2-3 cm broad, gradually attenuate upwards, suddenly narrowed at base, thence decurrent either nearly down to the base of the short stipe, or leaving a rather distinct wingless stipe to 3 cm long, margin often slightly wavy; *texture* firmly chartaceous, color brownish; *veins* hardly visible but distinct under strong light; *sori* small, scattered over the entire under surface, naked.

Hongkong: Mt. Gaugh, *C. Wilford 38* (1858); Victoria Peak, *J. Lamont 7303* in Herb. Hance; ibid. *R. C. Ching*, Dec. 15, 1929. Kwangtung: North River, *C. L. Tso 21105, 20542;* Lockchong, *Y. Tsiang 1243;* Winglar, Lungtau Shan, *To & Tsang 12529* ex Herb. Lingnan Univ. Kiangsi: Lu Shan, *Maires* (1880); *Dr. Shearer* (1873). Fukien: Foochow, *H. H. Chung 1259, 3714;* Yuenfu, *Warburg* (1885-89). Chekiang: Ningpo, *Hancock 24* (1877); Poo-tu island, *K. K. Tsoong 96*. Kweichow; Gan-chow, *Cavalerie 1472, 4009;* Tuyun; *Y. Tsiang 5884, 5994.* Kwangsi: Tsin-lung Shan, Lin Yen, *R. C. Ching 6898*. Hupeh: Cein-scian Hsien, *Silvestri 65*. Szechuan: Opien: *T. F. Lou 131* (1929).

Also Formosa, Tonkin, Japan and Tsushima.

A very common fern in South China, particularly in the province Kwangtung; generally epiphytic on the trunk of trees or over rocks under forests. Authors on Chinese and Japanese ferns have generally taken this for Malayan *Polypodium superficiale* Blume, with which it has in fact little in common, except the general outline. To *M. hymenodes* (Kze.) this species is very closely related, differs but in suddenly narrowed leaf-base, thicker texture and consequently less visible venation, and in smaller, denser sori.

Plate 85. Fig. 1. habit sketch (natural size). 2. scale from rhizome (×50).

第 八 十 五 圖

波 氏 星 蕨 (水 龍 骨 科)

MICROSORIUM BUERGERIANUM (Miquel) Ching

地下莖攀懸或匍匐於石上，略呈扁平，黝色；鱗片深褐色，卵圓形，漸尖頭，久則脫落；葉頗遠生，披針形，長十至二十糎，寬二至三糎，向端漸尖，下部急狹成翅，循葉邊下延甚長，或達甚部，全緣，常略呈波狀，厚紙質，黃褐色，葉脈不顯明，於強光下可見；子囊羣形小，體概圓，光滑，星散於葉之下面。

分布： 香港，廣東，福建，浙江，廣西，四川，江西廬山；日本及台灣亦產之。

本種在廣東極爲普通，自來學者概誤識爲南洋羣島所產之 M. superficiale, 實則大不相類，與本種最相似者，莫過於前種，然以其葉質較厚，葉脈不甚顯明，葉之下部急狹，與子囊羣較小而密，故易識別。

圖註： 1. 本種全形(自然大)， 2. 莖上之鱗片(放大五十倍)。

MICROSORIUM BUERGERIANUM (Miquel) Ching

波　氏　星　蕨

C. R. Feng Del. et Lith.

PLATE 86

MICROSORIUM PUNCTATUM (L.) Copeland

POLYPODIACEAE

MICROSORIUM PUNCTATUM (L.) Copeland, Orient. Gen. Polyp. in Univ. Calif. Publ. Bot. **16:** 111 (1929); Ching, Bull. Fan Mem. Inst. Biol. **4:** 309 (1933).

Acrostichum punctatum L. Sp. Pl. ed. II. 1524 (1763).

Polypodium punctatum Sw. in Schrad. Journ. **1800²:** 21 (1801); Christ, Farnkr. d. Erde 106 (1897); C. Chr. Ind. Fil. 557 (1906).

Polypodium iridioides Poiret in Encycl. Bot. **5:** 513 (1804); Hooker et Grev. Ic. Fil. t. 125 (1831); Dunn et Tutcher, Fl. Hongk. & Kwangt. 352 (1912); Ogata, Ic. Fil. Jap. **2:** pl. 136 (1930).

Microsorium irregulare Link, Hort. Berol. **2:** 110 (1833); Fée, Gen. Fil. 268 t. 20B. f. (1850-52)

Pleopeltis punctata Bedd. Ferns Brit. Ind. Suppl. 22 (1867); Handb. Ferns Brit. Ind. 357 (1883).

Pleopeltis irridioides Moore, Ind. Fil. LXXVII (1857); Bedd. Ferns S. Ind. t. 178 (1864).

Rizome short-creeping, thick, subglabrous, epiphytic the on trunk of trees, or on rocks; *scales* sparce at the base of stipe, fusco-brown, clathrate, broadly ovate, acuminate, dorsally affixed, fallen off at last; *frond* subcaespitose or close together, erect, 35-55 cm long, 3-5 cm broad, broadly linear-lanceolate, acuminate, gradually narrowed downward, base long-attenuate, or often rotundo-cuneate or subauriculate, stipe thick, short or almost none, leaf-margin entire, or sometimes irregularly undulate; *texture* thin herbaceeus, or chartaceous when dried, perfectly naked, pale green on both sides; lateral *veins* and veinlets quite distinct, copiously anastomosing with divaricating included veinlets; *sori* medium-sized, dense, irregular, covering the whole of under surface in the upper part of frond, lemon-yellow, naked, generally apical on the included veinlets, irregularly fused.

A widely dispersed epiphytic fern, ranging from Africa, Polynesia, Malesia, over India generally, Indo-China to South China and Formosa. In China, specimens have been seen from provinces Kwangtung (including the island Hainan), Kwangsi and the southern part of Kweichow.

This fern was first described from plant from Canton by Linné under *Acrostichum*, presumably on the ground of the dense, naked, irregularly subconfluent sori much like those in *Acrostichum*. It is a very variable fern, particularly as to the shape of leaf-base even in the the specimens from the same region, which is sometimes gradually attenuate to quite a distinct, thick stipe, or sometimes only slightly narrowed quite down to the base into a broadly rotundo-cuneate or subauricled shape.

Plate 86. Fig. 1. habct sketch (natural size). 2. scale from rhizome (×50).

第 八 十 六 圖

星 蕨 (水龍骨科)

MICROSORIUM PUNCTATUM (Linnaeus) Copeland

地下莖肥短，橫生，半光滑，附生於樹幹或岩石上，常略被白粉；鱗片疏生於葉柄基部，闊卵形，漸尖頭，腹部着生，久則脫落；葉近生，直立，長三十五至五十五粉，寬三至五粉，帶狀披針形，漸尖頭，下部漸狹，具短肥柄，或無柄，基部呈圓楔形或亞耳形，全緣或間呈不規則之深波形，堅紙質或爲薄紙質，兩面光滑，淡綠色，側脈不甚發達而甚顯明，小脈亦明白可見；子囊羣中大，密生，不規則分布於葉之下面，上部淡黃色，光滑，常爲不規則之連合。

分布： 自阿非利加洲至馬萊羣島，菲列濱，全印度，安南，交趾，台灣而達中國之瓊洲島，廣東本部，廣西，貴州。

本種之模式標本原產於廣東，林納氏初名之爲 Acrostichum 屬之一種，後人改隸水龍骨屬，売潑崙特氏於一九二九年始改爲今名；本種葉體基部變異甚大，然除此則頗爲一致。

圖註： 1. 本種全形(自然大)， 2. 莖上之鱗片(放大五十倍)。

MICROSORIUM PUNCTATUM (Linné) Copeland

星　蕨

C. R. Feng Del. et Lith.

PLATE 87

MICROSORIUM ZIPPELII (Blume) Ching

POLYPODIACEAE

MICROSORIUM ZIPPELII (Blume) Ching, Bull. Fan Mem. Inst. Biol. **4:** 308 (1933).

Polypodium Zippelii Blume, Fl. Javae. Fil. 172 t. 80 (1829); Mett. Polyp. n. 224 (1857); C. Chr. Ind. Fil. 575 (1906).

Polypodium heterocarpa Bedd. (non Mettenius) Ferns Brit. Ind. t. 324 (1870).
Pleopeltis Zippelii Moore, Ind. Fil. 348 (1862); Bedd. Handb. Ferns Brit. Ind. 357 (1883).
Polypodium heterocarpum var. *Zippelii* Hk. et Bak. Syn. Fil. 360 (1868).

Rhizome rather thick, short-creeping, hypogaeous, atratous; *scales* fusco-brown, rather firm, ovate, acute, appressed; *frond* rather approximate, broadly lanceolate, 50-70 cm long, including the short, but wingless, terete stipe, gradually attenuate along the upper part of stipe in a narrow wing, apex rather subcaudate, margin entire, but somewhat wavy; *texture* subcoriaceous, or thick chartaceous, color dark green, naked on both sides; lateral main *veins* distinct near to the margin, oblique, 1.2 cm apart, intervening veinlets obscure; *sori* large, rounded, naked, rather regularly two-rowed between main veins, and about 5-6 between the costa and margin.

Hainan: Ng Chi Leng, *F. A. McClure 8648;* Khio Tswi, *Eryl Smith 1544;* Fan Yah, *C. L. Tso & N. K. Chun 44027*, Oct. 7, 1932. Kwangsi: Yao Shan, *S. S. Sin & K. K. Whang 698*, on stream side.

Distr. Malesia, the Philippines, Indo-China, India generally and South China.

Habit of *M. membranaceum* (Don), differs in generally smaller size, subcoriaceous frond with short, but wingless, terete stipe, and larger biseriate sori between lateral main veins.

Plate 87. Fig. 1. habit sketch (natural size). 2. portion of a frond, showing venation and position of sori (×2). 3. scale from rhizome (×50).

第 八 十 七 圖

戚氏星蕨(水龍骨科)

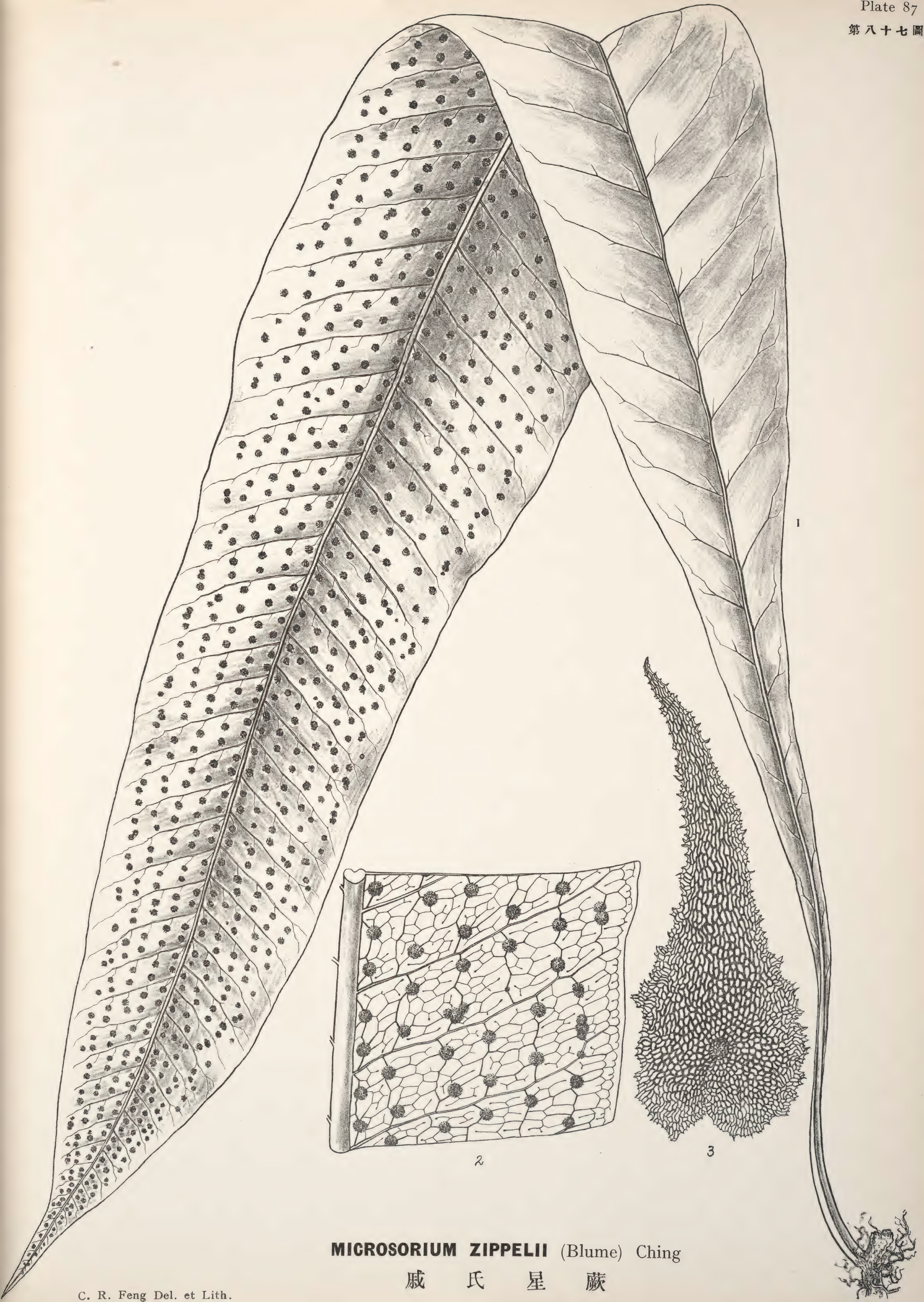
MICROSORIUM ZIPPELII (Blume) Ching

地下莖橫生，頗肥，土生，黑色；鱗片深褐色，卵形，短尖頭；葉頗近生，闊披針形，長五十至七十粉，下部漸狹，柄無翅，圓形，全緣，間呈波形，亞革質或厚紙質，深綠色，光滑，側脈顯著，粗強，幾達邊緣，網脈隱約；子囊羣形大體圓，概爲有規則之二列，位於兩側脈之間。

分布： 瓊洲島，廣西猺山，馬萊羣島，菲列濱，全印度。

本種形體，極似膜葉星蕨 (M. membranaceum)，然其葉體通常較小，質厚而色深，子囊羣較大且爲頗有規則之二列，位於兩側脈之間，故易於識別。

圖註： 1. 本種全形(自然大)， 2. 葉之一部，表示其葉脈及子囊羣之位置(放大二倍)， 3. 莖上之鱗片(放大五十倍)。



MICROSORIUM ZIPPELII (Blume) Ching

戚　氏　星　蕨

C. R. Feng Del. et Lith.

PLATE 88

MICROSORIUM MEMBRANACEUM (Don) Ching

POLYPODIACEAE

MICROSORIUM MEMBRANACEUM (Don) Ching, Bull. Fan Mem. Inst. Biol. **4:** 309 (1933).

Polypodium membranaceum Don, Prod. Fl. Nepal. 2 (1825); Mett. Polyp. n. 235 (1857); Hk. et Bak. Syn. Fil. 360 (1868); Christ, Farnkr. d. Erde 105 (1897); C. Chr. Ind. Fil. 544 (1906); Ogata, Ic. Fil. Jap. **2:** pl. 88 (1929).

Pleopeltis grandifolia Bedd. Ferns S. Ind. t. 177 (1864); Christ, Bull. Herb. Boiss. **6:** 874 (1898).
Pleopeltis membranacea Moore, Ind. Fil. 191 (1857); Bedd. Handb. Ferns Brit. Ind. 355 (1883).

Rhizome creeping, thick, fleshy, over 6 mm across, subhypogaeous or epiphytic, densely scaly; *scales* fusco-brown, thin, clathrate, broadly lanceolate, acuminate, subentire; *frond* subcaespitose or approximate, very broadly lanceolate, 6-14 cm broad, 30-50 cm long, acnminate, gradually attenuate down to the base of the winged and rather sharply carinate, herbaceous stipe, margin entire or somewhat wavy; *texture* thin herbaceous, green on both sides, rachis sharply ridged on lower part underneath, lateral main *veins* wide apart, distinct near to the margin, intervening veinlets conspicuous, areolae large with divaricated including veinlets; sori small, irregularly disposed between main veins, mostly compital, naked.

In China, numerous specimens have been examined from provinces Yunnan, Kweichow, Kwangsi, Kwangtung. It ranges from Ceylon, whole of India, Indo-China, Southwestern China, Formosa to the Philippines.

Plate 88. Fig. 1. habit sketch (natural size). 2. portion of a frond, showing venation and position of sori (×3). scale from rhizome (×50). 4. cross section of the lower part of a stipe (×20).

第 八 十 八 圖

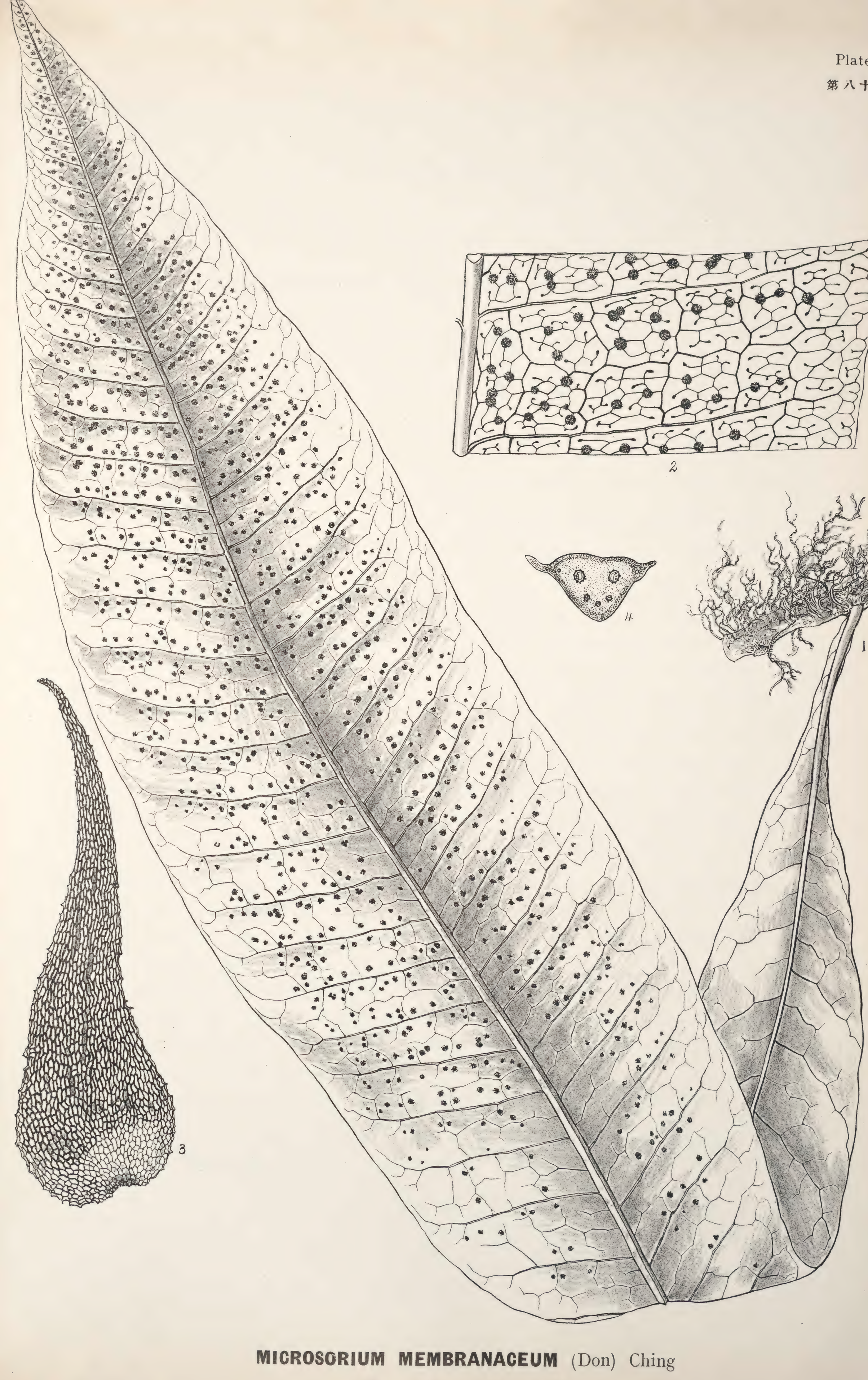
膜葉星蕨(水龍骨科)

MICROSORIUM MEMBRANACEUM (Don) Ching

地下莖橫生，肥肉質，土生或上生；鱗片密生，深褐色，闊卵形，漸尖頭，全緣；葉近生或稍遠生，闊披針形，長三十至五十粉，寬六至十四粉，漸尖頭，下部漸狹，延及基部，柄具狹翅，橫切面呈三角形，因下面具稜角也。薄紙質，綠色，全緣，兩面光滑，側脈明顯，不達葉邊，網脈可見；子囊羣形小體圓或橢圓，不規則散生，常不規則連合，光滑。

分布： 雲南，貴州，廣西，廣東；錫蘭，全印度，安南，交趾，台灣，及菲列濱羣島均產之。

圖註： 1. 本種全形(自然大)， 2. 葉之一部，表示其葉脈及子囊羣之位置(放大三倍)， 3. 莖上之鱗片(放大五十倍)， 4. 葉柄下部之橫切面(放大二十倍)。



MICROSORIUM MEMBRANACEUM (Don) Ching

膜葉星蕨

PLATE 89

NEOCHEIROPTERIS PHYLLOMANES (Christ) Ching

POLYPODIACEAE

NEOCHEIROPTERIS PHYLLOMANES (Christ) Ching, Bull. Fan Mem. Inst. Biol. **4:** 110 (1933).

Polypodium phyllomanes Christ, Bull. Acad. Géogr. Bot. (1902) 210 c. fig.; C. Chr. Ind. Fil. 553 (1906).

Polypodium ovatum Wall. (non Burm. 1768) Hooker et Grev. Ic. Fil. t. 41 (1827); Takeda, Notes, R. Bot. Gard. Edinb. **8:** 289 (1915).

Pleopeltis ovata Bedd. Ferns Brit. Ind. pl. 157 (1866); Handb. Ferns Brit. Ind. 354 (1883).

Polypodium ensatum Diels (non Thunberg) in Engl. Jahrb. **29:** 203 (1901); Hayata, Ic. Pl. Form. **5:** 312 (1915).

Rhizome wide-creeping, subhypogaeous, rather thick, densely scaly; *scales* fusco-brown, clathrate, ovate, acuminate; *frond* far apart, erect, stipe 10-17 cm long or longer, obscurely blackish and rather densely, fibrillose-scaly, particularly, on the lower part, lamina ovate-oblong, acuminate, 13-23 cm long, 7-12 cm broad at base, which is subtruncate, or rotundo-cuneate, or sometimes cuneate, margin entire (f. *typica*), or provided with one or two broadly short lanceolate lobes at base (f. *deltoidea*), or not infrequently copiously laciniato-lobed with basal lobes again divided on both sides (f. *doryopteris*); *texture* firm, thickly chartaceous, color light green, glabrous above, more or less scaly underneath; lateral main *veins* distinct nearly to the margin, patent, nearly 1 cm apart, straight, but in lobed forms often looped at base; intervening veinlets rather obscure, copiously anastomosing with divaricating included, clavate veinlets; *sori* large, dark-brown, globose, irregularly multiseriate on each side of costa or sometimes subuniseriate, especially, towards apex, clothed when young with fuscous, clathrate, peltate scales as in *Lepisorus*.

A common fern in Yunnan, Szechuan, Kweichow, Kwangtung and eastwardly to the provinces Anwhei and Chekiang; also recently known in Kiangsu (I-shing, leg. *C. Y.* Luh n. 462). It is also found abundant in the Himalayas and in the island Formosa.

Very variable in the outline of lamina as very well illustrated by Christ (l.c.), and in some extreme forms it differs little from *N. ensata* (*Polypodium ensatum* Thunberg), with which it has often been confused.

Plate 89. Fig. 1a habit sketch (natural size). 1b. forma *deltoidea* (natural size). 1c. forma *doryopteris* (×½). 2. portion of a frond, showing venation and position of sori (×2). 3. scale from rhizome (×30). 4. peltate paraphyses from a sorus (×50). 5. scales from underside of a frond (×50). 6. scale from a stipe (×50). 7. cross section of a rhizome, showing perforated type of steles (×10).

第 八 十 九 圖

單 葉 扇 蕨 (水 龍 骨 科)

NEOCHEIROPTERIS PHYLLOMANES (Christ) Ching

地下莖匍匐甚廣，半土生；鱗片密生，卵形，漸尖頭；葉遠生，直立，柄長十至十七粉，或過之，黝色，下部具細長鱗片，葉體長卵形，長十三至二十三粉，寬七至十二粉，基部最闊，截形，或圓楔形，或間爲楔形，全緣，或下部具一至二對裂片，或一至二次羽狀分裂，厚紙質，淡綠色，上面光滑，下面略具鱗片，側脈明顯，開展，幾達葉邊；子囊羣形圓體大，不規則排列或向葉端爲一列，幼時密覆楯形鱗片，一如瓦葺然。

分布： 雲南，四川，貴州，廣東，廣西，湖北，安徽，江西，浙江，江蘇，福建；喜馬拉亞及台灣亦產之。

本種變異甚大，非特大小不一，即形體亦由卵形單葉至不規則之二次羽狀分裂，有時單葉之形體極類原產於日本之 Neoch. ensata(Thunberg), 難於識別。

圖註： 1a. 本種模式全形（自然大）， 1b. 本種變形之一， 1c. 本種變形之二(二分之一大)；2. 葉體之一部，表示其葉脈及子囊羣之位置（放大二倍）， 3. 莖上之鱗片（放大三十倍）， 4. 子囊羣上之楯形鱗片（放大五十倍）， 5. 葉體下面之鱗片（放大五十倍）， 6. 葉柄上之鱗片(放大五十倍)，7. 莖之橫切面，表示其維管束之排列(放大十倍)。

NEOCHEIROPTERIS PHYLLOMANES (Christ) Ching

單　葉　扇　蕨

PLATE 90

COLYSIS BONII Ching

POLYPODIACEAE

COLYSIS BONII Ching, Bull. Fan Mem. Inst. Biol. **4:** 322 (1933).

Rhizome creeping, 3 mm thick, hypogaeous; *scales* fusco-brown, thin, ovate, long-acuminate, spreading; *frond* subdimorphous, 1 cm apart, erect, stipe 8-18 cm long, straminous, sterile lamina 16-27 cm long, 3.5-5 cm broad, or sometimes much narrower, lanceolate, acuminate, base rotundo-cuneate, narrowly decurrent for some distance downward, margin entire but crispo-repand; *texture* firm, thickly chartaceous, color light green; lateral main *veins* and veinlets quite distinct; *fertile* lamina on longer stipe, not much different from the sterile but in somewhat narrower lamina with more undulato-repand margin; *sori* linear, continuous, flexuose, very oblique, from costa extending to the margin, 4 mm apart.

Hainan: Nam Kao, *Eryl Smith 1516, 1517*, January 19, 1923; Dai Land, Dung Ka, *C. L. Tso & N. K. Chun 43945*, Sept. 25, 1932, on moist rocks by streams.

Tonkin occid: *Bon 2395* (type).

The present fern seems to be a close ally to the Malayan *C. membranacea* (Bl.) Presl and *C. Wrightii* (Hooker) from South China and the island Formosa, differs from both in much thicker texture, and long-stalked frond with broad and shortly decurrent base. From the latter it further differs in light-green leaves instead of invariably turning obscurely blackish upon drying.

Plate 90. Fig. 1. habit sketch (natural size). 2. scale from rhizome (×50).

第 九 十 圖

彭 氏 線 蕨 (水 龍 骨 科)

COLYSIS BONII Ching

地下莖匍匐生於土中；鱗片深褐色，卵形，端狹長，開張；葉頗近生，柄長八至十八粉，稻桿色，光滑，葉體長十六至二十七粉，寬三．五至五粉，間甚狹，披針形，漸尖頭，基部圓楔形，稍下延，全緣而呈細波狀反捲，厚紙質，淡綠色，側脈及小脈頗明顯；子囊羣葉之柄較長，葉體與非子囊羣葉略同，子囊羣綫形，細長，略呈曲折，由中肋斜出達於葉邊，羣間距離約四糎。

分布： 瓊洲島及交趾。

本種頗類馬萊島之 C. membranacea (Bl.) 與中國南部及台灣之 C.Wrightii (Hook.), 然其葉質較厚，無翅葉柄較長，易於識別，又後者之葉爲黝褐色，本種則爲淡綠色。

圖註： 1. 本種全形(自然大)， 2. 莖上之鱗片(放大五十倍)。

COLYSIS BONII Ching

彭 氏 線 蕨

C. R. Feng Del. et Lith.

PLATE 91

COLYSIS HENRYI (Baker) Ching

POLYPODIACEAE

COLYSIS HENRYI (Baker) Ching, Bull. Fan Mem. Inst. Biol. **4:** 325 (1933).

Gymnogramme Henryi Baker, Journ. Bot. (1887) 171.
Gymnogramme macrophylla Baker, Journ. Bot. (1888) 230 (non Hook.).
Selliguea Henryi Christ, Bull. Herb. Boiss. **6:** 879 (1898); Bull. Soc. Bot. France **52:** Mém. 1. 25 (1905).

Polypodium Henryi C. Chr. Ind. Fil. 512 (1906).
Selliguea cochlearis Christ (non Reinw.), Bull. Acad. Géogr. Bot. (1907) 142.
Polypodium mon-changense C. Chr. Ind. Fil. Suppl. 60 (1906-12).

Rhizome wide-creeping, subhypogaeous, densely scaly; *scales* fusco-brown, thin, ovate, acuminate, clearly reticulate; *frond* far apart, erect, wingless stipe 10-15 cm long, rufo-straminous, naked, lamina broadly lanceolate, 24-30 cm long, 5-7 cm broad at the middle, which is the broadest part, thence downward suddenly narrowed and then gradually attenuate in a narrow wing on each side of stipe, apex short-acuminate; *texture* herbaceous, brownish green, tinged wind-reddish and so is the midrib, naked on both sides, margin entire, but slightly repando-undulate; lateral main *veins* fine, but quite distinct, oblique, intervening veinlets also visible; *sori* linear, normally continuous, one between each pair of lateral veins, from midrib extending nearly to the margin, about 5 mm apart.

Hupeh: Nanto near Ichang, *Henry 2114* (type); Ichang, *Henry 7880*, Kweichow: Kwei-yang, *Bodinier 1572;* Meitan, *Y. Tsiang 8039;* Lo-pie, *Bodinier 1965*. Szechuan: Mt. Omei, *E. Faber 1002; W. P. Fang 2586*, Aug. 4, 1928, in thickets. Kwangsi: Tien Lian Shan, *R. C. Ching 5357, 5322*. Anwhei: Sui-nin Hsien, Lan-tien, *K. K. Tsoong 1950*

A common, pretty fern in West China, particularly on the sacred Mount Omei. It is closely related to the Malayan *C. macrophylla* (Bl.), to which Rev. Faber's plant was referred by Baker, but from which it differs, apart from geographical distinction, in frond being suddenly narrowed below the middle and in different color.

Plate 91. Fig. 1. habit sketch (natural size). 2. portion of a frond, showing venation and position of sori (×3). 3. scale from rhizome (×50).

第 九 十 一 圖

亨氏線蕨(水龍骨科)

COLYSIS HENRYI (Baker) Ching

地下莖匍匐甚廣，半土生。鱗片密生，深褐色， 卵形，漸尖頭； 葉間距離約三粉， 柄長十至十五粉，無翅，光滑，略呈酒紅色；葉體廣披針形，長二十四至三十粉，中部寬五至七粉，下部急狹成翅下延， 短尖頭，紙質， 淡黃色而略呈酒紅色， 兩面光滑，全緣，稍呈細波狀反捲，側脈細而頗明顯，斜出，小脈亦頗顯明；子囊羣綫形，一列位於側脈之間，由中肋斜出，直達葉邊，羣間距離約五糎。

分布： 湖北，四川，廣西，安徽。

本種在峨嵋山甚爲普通， 其形體頗似馬萊島所產之 C. macrophylla (Blume), 然其葉之下部急狹，葉色略呈黃紅色，故易識別。

圖註： 1. 本種全形 (自然大)， 2. 葉體之一部，表示葉脈及其子囊羣之位置 (放大三倍)， 3. 莖上之鱗片(放大五十倍)。

COLYSIS HENRYI (Baker) Ching

亨　氏　線　蕨

C. R. Feng Del. et Lith.

PLATE 92

COLYSIS LONGIPES Ching

POLYPODIACEAE

COLYSIS LONGIPES Ching, Bull. Fan Mem. Inst. Biol. **4:** 332 (1933).

Rhizome wide-creeping, thick, 4 mm across, greenish, densely scaly; *scales* fusco brown, clathrate, ovate, shortly acuminate, subentire; *frond* monomorphous, about 2 cm apart, stands on the same plane as does the rhizome, stipe 15-20 cm long, slender, naked, stramineus, base articulate, lamina 6-8 cm long, as broad or broader, ovate-deltoid, deeply pauci-pinnatifid, base rotundo-truncate, slightly decurrent; *pinnae* generally 3, or rarely more, on each side, the terminal one similar to the lateral, lanceolate, to 7 cm long, 1.4 cm broad at the middle, shortly acuminate, somewhat narrowed towards the base, margin entire, thin, plane; *texture* firm, coriaceous, color pale green, naked on both sides; *veins* hidden; *sori* rather few-paired to each segment, oblique, linear, far apart.

Hainan: En route from Dung Ka to Win Fa Shi, *C. L. Tso & N. K. Chun 43697*, August 24, 1932, in thickets.

Endemic in the island Hainan. A very distinct fern, of the group of *C. elliptica* (Thunberg), differs above all, in short and broadly deltoid, pauci-pinnatifid frond of hard, coriaceous texture, provided with unusually long stipe, which is twice as long as the lamina.

Plate 92. Fig. 1. habit sketch (natural size). 2. scale from rhizome (×50).

第 九 十 二 圖

長 柄 線 蕨（水 龍 骨 科）

COLYSIS LONGIPES Ching

地下莖肥，匍匐甚廣，黝綠色；鱗片密生，深褐色，卵形，短尖頭。葉頗遠生，一形，柄長十五至二十粉，稻桿色，光滑；葉體三角卵形，長約六至八粉，寬如之，一回羽狀分裂，基部圓截形，稍下延，硬革質，淡綠色，光滑，小葉二至三對，披延針形，短尖頭，向基部稍狹，頂生葉片形略同於側生各對；葉脈不顯，子囊羣細長，斜出。

分布： 瓊洲島。

本種爲本属特殊之種，與 C. elliptica (Thunberg) 相近，然其極長之柄與極短闊硬革質之葉體，僅具二至三對之小葉，易別於他種。

圖註： 1. 本種全形(自然大)， 2. 莖上之鱗片(放大五十倍)。

COLYSIS LONGIPES Ching

長　柄　線　蕨

C. R. Feng Del. et Lith.

PLATE 93

CHRISTOPTERIS TRICUSPIS (Hooker) Christ

POLYPODIACEAE

CHRISTOPTERIS TRICUSPIS (Hooker) Christ, Journ. de Bot. France **21:** 273 (1908); Bower, Ferns III. 213 (1928).

Acrostichum tricuspe Hooker, Sp. Fil. **5:** 272 t. 304 (1864); Syn. Fil. 422 (1868).

Gymnopteris tricuspis Bedd. Ferns Brit. Ind. t. 53 (1866); Handb. Ferns Brit. Ind. 435 (1883); Christ, Farnkr. d. Erde 49 (1897); Diels, Nat. Pfl. Fam. **1:** 4. 299 (1899).

Cheiropleuria tricuspis, J. Sm. Hist. Fil. 139 (1875).

Leptochilus tricuspis C. Chr. Ind. Fil. 187 (1906).

Christopteris Eberhardtii Christ, l. c.

Rhizome wide-creeping, rather stout, epiphytic on the trunk of trees, densely scaly; *scales* atropurple, ovate-lanceolate, with very long, spreading hair-point; *frond* close, strongly dimorphous, stipe articulated to a prominent pseudopodium on the rhizome, about 30 cm long, that of fertile frond about twice as long, rather slender, straminous, naked, lamina of sterile frond deeply trilobed or 4-lobed, base cuneate, lateral lobes to 30 cm long, the middle one much longer, about 4 cm broad, entire, acuminate, *texture* subcoriaceous, rather soft, color light green, naked on both sides; *veins* obscure, but distinct against light, veinlets between the fine, wide-apart, lateral main veins copiously anastomosing with divaricating included veinlets; *fertile* lamina much elongate, tripartite nearly to the base with much contracted segments below 1 cm broad, and as long as the sterile ones, linear, strap-shaped, acuminate, ascendingly oblique; *texture* subcoriaceous; *sori* covering the entire underside except the costa and the very tip; *paraphyses* rather sparce, short, septate and branched; *spores* oblong-reniform, pellucide, greenish-yellow, smooth.

Hainan: Ng Chi Leng, Ah Ping, *C. L. Tso & N. K. Chun 44147*, October 24, 1932.

Sikkim: Darjeeling, 1,500 ft. alt. Also Burma and Tonkin.

This remarkable fern, known previously only from Sikkim, has recently received a thorough anatomical study from Prof. Bower, who is of the opinion that it has its systematic relation to the genus *Cheiropleuria*. *Christopteris Eberhardtii* Christ from Tonkin appears by no means specifically different from the present species, except the sterile lamina being palmately divided, i. e. with five lobes.

Plate 93. Fig. 1. habit sketch (natural size). 2. portion of a sterile segment, showing venation (×2). 3. scale from rhizome (×50). 4. part of a cross section of a fertile segment, showing the diplodesmic venation and branched paraphyses associated with sporangia (×16), after Bower. 5. spores (magnified).

第 九 十 三 圖

戟 蕨 (水龍骨科)

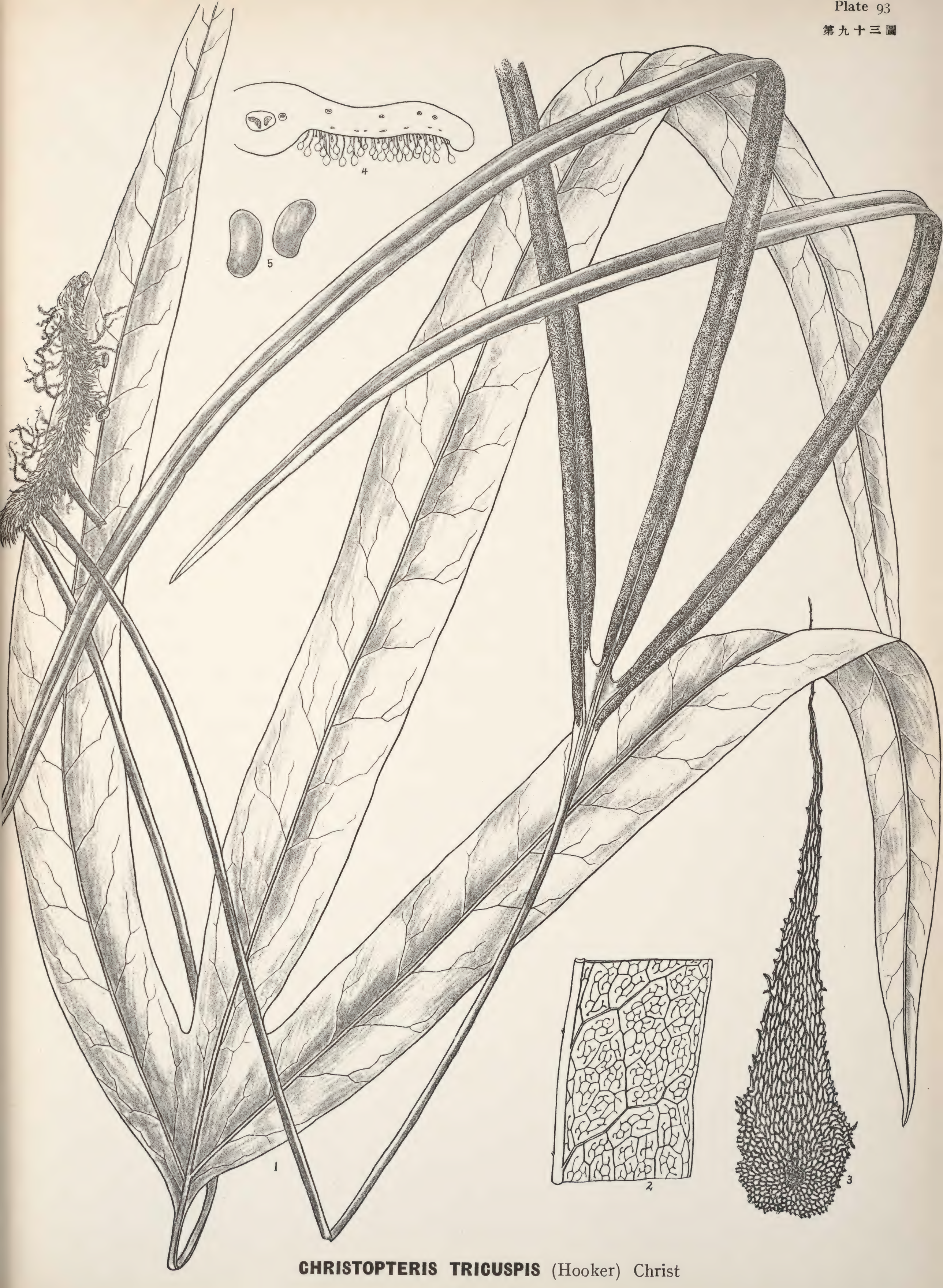
CHRISTIOPTERIS TRICUSPIS (Hooker) Ching

地下莖匍匐甚廣，附生於樹幹上；鱗片密生，深紅櫻色，上部細長如針，開張；葉二形，葉柄基部具骨節，長約三十粉，子囊羣葉之柄長約二倍之，稻桿色，光滑，非子囊羣葉體三裂或間爲四裂，基部楔形，側生裂片寬四粉，長達三十粉，其中央裂片較長，全緣，漸尖頭，亞革質，淡綠色，兩面光滑，葉脈不顯明，網眼內具分叉之小脈；子囊羣葉亦爲三裂，裂片僅基部連合，狹長，寬不及一粉，帶形，子囊羣遍生於下面，僅中肋可見。

分布： 瓊洲島之五指嶺，西京，緬甸，交趾。

本種昔日僅見於西京，緬甸，今發現於瓊洲島，實爲分布上一大開展；交趾產之 C. Eberhardtii Christ, 具掌狀五裂之非子囊羣葉體，實與本種無他異。

圖註： 1. 本種全形(自然大)， 2. 非子囊羣葉之一部， 表示其葉脈(放大三倍)， 3. 莖上之鱗片（放大五十倍)， 4. 子囊羣葉之橫切面，表示其二層葉脈之分布情形及分叉之線形體， 5. 胞子(放大)。



CHRISTOPTERIS TRICUSPIS (Hooker) Christ

戟　　蕨

C. R. Feng Del. et Lith.

PLATE 94

POLYPODIUM MANMEIENSE Christ

POLYPODIACEAE

POLYPODIUM MANMEIENSE Christ, Bull. Herb. Boiss. **6:** 870 (1898); Bull. Acad. Géogr. Bot. (1906) 104; Bull. Soc. Bot. France **52:** Mém. 1. 13 (1905); C. Chr. Ind. Fil. 543 (1906).

Polypodium simulans Baker, Kew Bull. (1906) 13.

Rhizome rather slender, wide-creeping, epigaeous, clothed in moderately dense, lanceolate, long-acuminate, sparcely denticulate, sorbid-brown *scales; frond* distant, erect, stipe rather slender, naked, pale straminous, 10-15 cm long, lamina lanceolate, simple pinnate, 20-34 cm long, 5-6 cm broad, base truncate, apex caudate with gross serration, *texture* herbaceous, pale green, naked in all parts; *pinnae* numerous, horizontally patent, 3-3.5 cm long, 4 mm broad, linear-lanceolate, decurrent, or rarely with the lower few pairs adnate to the wingless rachis, the basal ones generally slightly abbreviated with low and remote teeth; *veins* free or with open areolae; *sori* small, globose, superficial, placed midway between costa and margin.

Yunnan: Mengtze, *A. Henry 10081* (type), *13036; Hancock 152;* Tengyueh, *G. Forrest 26715;* Pauti-ho, *Forrest 27030;* Ta Hwa Shan, *K. K. Tsoong 4631.* Szechuan occid: *Wilson 5330, 2649; David* (1870).

Sikkim: Shillong, ex herb. *H. Z. Darrah* (1888). Siam: Doi Chiang Dap, *Kerr 1868, 6573.*

In habit, this species appears exactly like *P. microrhizoma* Clarke from the same locality and the neighbourhood, differs only in open venation, shorter, pale-colored stipe and shorter pinnae of somewhat thicker texture; from *P. vulgare* L. it differs chiefly in slender habit, thinner texture, narrower segments with much broader interspaces, and having veinlets of contiguous groups with a greater tendency to join into a row of somewhat open costal areolae.

Plate 94. Fig. 1. habit sketch (natural size). 2. pinna, showing venation and position of sori (×3). 5. scale from rhizome (×50).

第 九 十 四 圖

滇水龍骨(水龍骨科)

POLYPODIUM MANMEIENSE Christ

地下莖細長，匍匐甚廣；鱗片頗密，披針形，長尖頭，網眼透明；葉疏生，直立，柄細長，光滑，淡稻桿色，長十至十五糎，葉體闊披針形，光滑，寬僅五至六糎，基部截形，頂部尾形而具粗鋸齒，紙質，淡綠色，各部光滑，一次羽狀分裂，小葉數十對，開張，長約三糎，寬僅四糎，狹披針形，基部一對較短，邊緣具疏矮鋸齒；葉脈分開，不成網狀；子囊羣形小而圓，位於主脈與邊緣之間。

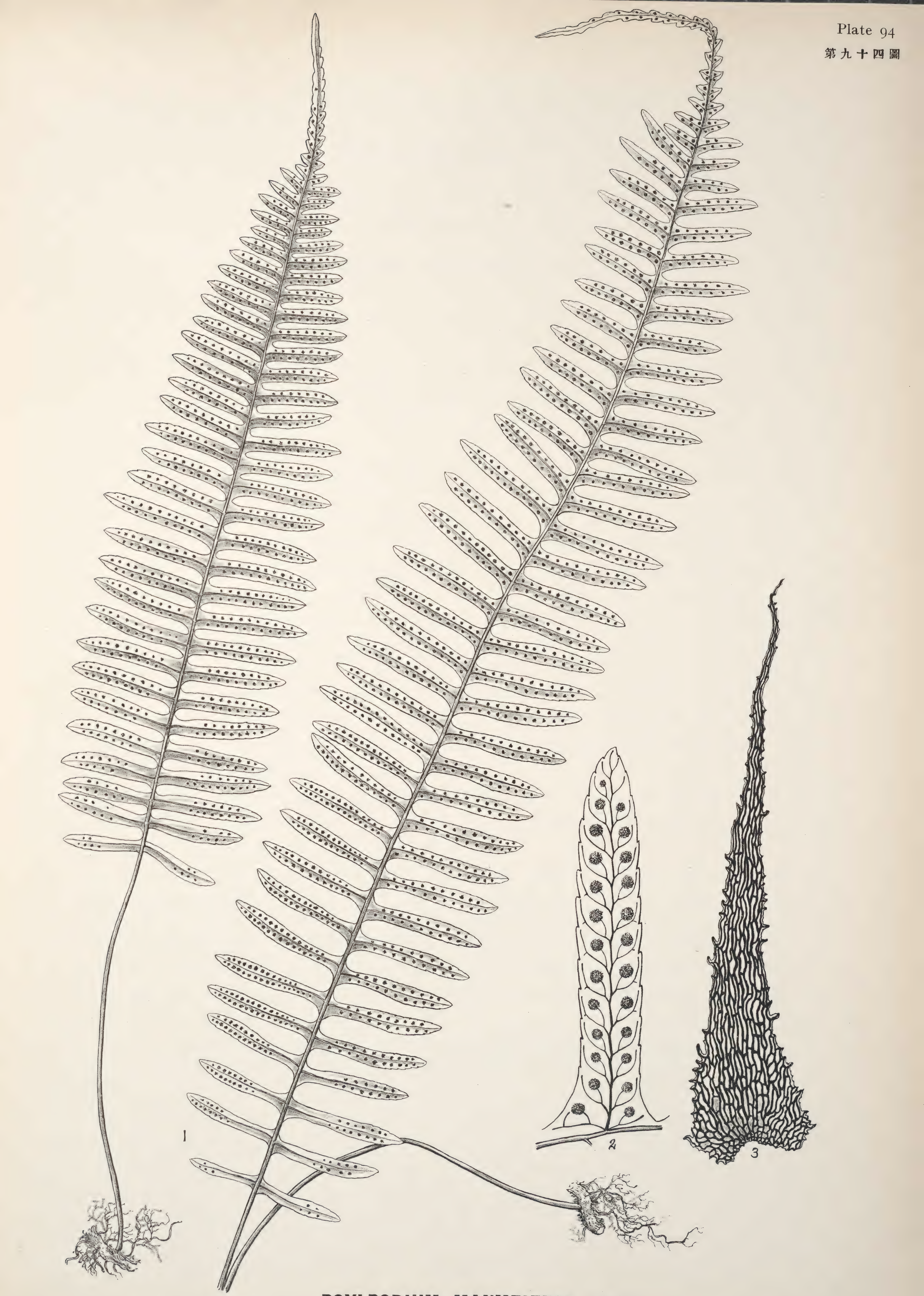
分布： 雲南，四川，交趾及暹羅。

本種形體稍似栗柄水龍骨(P. microrhizoma Clarke) 其不同處爲：葉脉分開，不成網狀，葉體狹而質較厚，葉柄短而不呈光亮之淡栗褐色。

圖註： 1. 本種全形(自然大)， 2. 小葉，表示葉脈及其子囊羣之位置(放大三倍)， 3. 莖上之鱗片(放大五十倍)。

Plate 94

第九十四圖



POYLPODIUM MANMEIENSE Christ

滇　水　龍　骨

C. R. Feng Del. et Lith.

PLATE 95

POLYPODIUM LACHNOPUS Wallich

POLYPODIACEAE

POLYPODIUM LACHNOPUS Wallich, Catal. n. 310 (1828); Hooker, Ic. Pl. t. 952 (1854); A Cent. Ferns t. 52 (1854); Mett. Polyp. n. 113 (1857); Hk. et Bak. Syn. Fil. 342 (1868); Diels, Nat. Pfl. Fam. **1:** 4. 312 (1899); C. Chr. Ind. Fil. 536 (1906).

Goniophlebium lachnopus J. Sm. in Hooker, Gen. Fil. ad t. 51 (1840); Bedd. Ferns Brit. Ind. t. 163 (1866); Handb. Ferns Brit. Ind. 319 (1883).

Schellolepis lachnopus J. Sm. Hist. Fil. 93 (1875).

Polypodium yunnanense Christ (non Franchet, 1885), Bull. Herb. Boiss. **6:** 869 (1898).

Rhizome epigaeous, wide-creeping, densely shaggy scaly; *scales* rufo-brown, clathrate, iridescent, broadly ovate, cuspidate or gradually attenuate with long subulate and spreading apices, margin with long or short teeth; *frond* rather close, stipe short, generally 6-10 cm long, naked, straminous, lamina narrowly lanceolate, 30-50 cm long, about 7 cm broad, pinnatifid down quite to the rachis into numerous, spreading, close, remotely crenato-serrate, subacuminate *pinnae; texture* papyraceo-herbaceous, glabrous above, densely scaly and sparcely hairy along rachis and costa underneath; *veins* hardly visible but distinct against light, areolae uniseriate; *sori* in a single row on each side of costa, densely scaly when young.

Yunnan: Mengtze, *A. Henry 9748A; Hancock 89, 91* (1893); Chungtien, *H. Handel-Mazzetti 6852;* Tengyueh, *G. Forrest 26753*. Szechuan: Tchen-kou-tin, *Farges 311.*

A very slender fern, endemic in the Himalayas, characterized by relatively short stipe and narrowly lanceolate, elongate lamina, dark-colored almost orbicular or ovate dense, finely reticulate scales having a long cuspidate or setiform spreading point, and consisting of large, clear, iridescent luminae. The sparcely pubescent underside of leaves may be a cause of confusion with the pilose form of *P. amoenum,* common in Yunnan and other parts of West China, which differs, however, in much broader leaves, decidedly stouter habit and thicker texture.

Plate 95. Fig. 1. habit sketch (natural size). 2. segment. showing venation and position of sori (×3). 3. scale from rhizome (×50). 4. scale from a sorus (×50). 5. hairs from underside of a lamina (×50).

第 九 十 五 圖

瀨水龍骨(水龍骨科)

POLYPODIUM LACHNOPUS Wallich

地下莖上生，匍匐甚廣；鱗片密生，深褐色，基部卵形，上部急狹，細長如毛，開張，葉近生，柄短，通常六至十粉，光滑，或幼時鱗片與細毛疏生；葉體狹長，寬僅達七粉，長達五十粉，一次羽狀分裂，小葉多數，開張，近生，具疏純鋸齒，亞漸尖頭，薄紙質，淡黃綠色，上面光滑，下面除中肋及主脈具鱗片甚密外，並有細毛疏生，久則變光滑；葉脈在光下十分顯明，網脈一列；子囊羣中大，幼時深褐色，小鱗片密覆。

分布： 雲南蒙自及西京喜馬拉亞。

本種爲本屬頗特殊之一種，其異於被毛之 P.amoenum Wall. 者，爲其莖上鱗片，較短之葉柄，甚細長之葉體與薄紙質之葉質是。

圖註： 1. 本種全形(自然大)， 2. 小葉，表示葉脈及其子囊羣之位置(放大三倍)， 3. 莖上之鱗片(放大五十倍)， 4. 子囊羣上之鱗片(放大五十倍)， 5. 葉體下面之毛(放大五十倍)。

C. R. Feng Del. et Lith.

POLYPODIUM LACHNOPUS Wallich

瀨水龍骨

PLATE 96

POLYPODIUM MICRORHIZOMA Clarke

POLYPODIACEAE

POLYPODIUM MICRORHIZOMA Clarke, Baker in Hooker Syn. Fil. 511 (1874); Clarke, Ferns N. Ind. in Trans. Linn. Soc. ser. 2. Bot. **1.** 551 (1880); C. Chr. Ind. Fil. 545 (1906).

Goniophlebium microrhizoma Bedd. Ferns Brit. Ind. Suppl. 22 t. 386 (1876).

Polypodium taliense Christ, Bull. Soc. Bot. France **52:** Mém. 1. 14 (1905); C. Chr. Ind. Fil. 569 (1906).

Rhizome hypogaeous, 2 mm thick, wide-creeping; *scales* sparce, dark brown, ovate, acuminate; *frond* distant, erect, stipe 10-14 cm long, naked, shining castaneous on the lower side and so is the rachis, lamina lanceolate, 22-30 cm long, 7-10 cm broad, simple pinnate; *pinnae* 20-30-jugate, patent, lanceolate, acute, distantly inciso-serrate, basal pinnae hardly abbreviated, but free from those next above, which are connected by a narrow wing along the rachis; *texture* membranaceous, green, lucide, naked on both sur, faces; *veins* distinct on both sides, areolae uniseriate, generally close, but some are open-particularly towards apex; *sori* small, oblong, medial, far apart.

Yunnan: Mengtze, *A. Henry 10168;* Ho-kin-tien, *Delavay 27,* July 24, 1883; Long-pon, *E.E. Maire 6047;* Pauti-ho, *C. Forrest 27029*. Szechuan: Yien-pin Hsien, *T. T. Yü 1701* (1932).

A pretty species endemic in the Himalayas. It differs from other species with goniophlebioid venation in almost membranaceous, lucide, naked leaves with castaneous, shining stipe, and the remotely inciso-serrate pinnae. The venation in this species is generally of goniophlebioid type, but some of the areolae are open, particularly towards the apex of pinnae.

Plate 96. Fig. 1. habit sketch (natural size). 2. scale from rhizome (×50). 3. pinna, showing venation and position of sori (×2).

第 九 十 六 圖

栗柄水龍骨(水龍骨科)

POLYPODIUM MICRORHIZOMA Clarke

地下莖細長，土生；鱗片疏生，黝色，披針形，漸尖頭，網眼透明；葉疏生，直立，柄長十至十四粉，光滑，淡栗褐色，有光澤，中肋下面亦然，葉體長二十二至三十粉，寬七至十粉，一次羽狀分裂，小葉二十至三十對，開展，披針形，急尖頭，鈍鋸齒疏生，基部一對與上部各對等長，惟其中肋不如上部之具有夾翅耳，薄紙質，色綠，具光澤，兩面光滑，葉脈明顯，網脈沿主脈一列；子囊羣小而圓，稍貼近主脈。

分布： 雲南，四川西南部，及喜馬拉亞山之楷喜米亞。

圖註： 1. 本種全形(自然大)， 2. 莖上之鱗片（放大五十倍） 3. 小葉，表示葉脈及其子囊羣之位置(放大二倍)。

3

1

2

POLYPODIUM MICRORHIZOMA Clarke

栗　柄　水　龍　骨

C. B. Fong, Del. et Lith.

PLATE 97

POLYPODIUM DIELSEANUM C. Christensen

POLYPODIACEAE

POLYPODIUM DIELSEANUM C. Chr. Ind. Fil. 522 (1906).

Polypodium leuconeuron Diels (non Christ, 1900) in Engl. Jahrb. **29:** 203 (1901).
Polypodium Wilsonii Christ, Bull. Acad. Géogr. Bot. (1906) 104.

Rhizome wide-creeping, rather thick, densely scaly; *scales* fusco-brown, imbricate, ovate-lanceolate, minutely denticulate, with large clear luminae and thin walls; *frond* distant, stipe 8-12 cm long, straminous or light castaneous, glabrous, lamina oblong-ovate, 25-35 cm long, to 15 cm broad at base, pinnate, truncate at base, caudate at apex, *pinnae* 12-20 pairs, patent, linear, apex obtuse, margin crenate-serrate, adnate and somewhat dilated above base, far apart, the greater part of rachis between pinnae wingless; *texture* chartaceous, color green, moderately villose on both sides of rachis and upper side of lamina; *venation* distinct, veins in pinnae anastomosing in one row of areolae on each side of costa, beyond which veinlets are free; *sori* small, one-rowed, naked.

Szechuan: Nanchuan, Tanchiawan, *von Rosthorn 398* (type); Mt. Omei, *E. H. Wilson 5336; P. W. Fang 2736, 2745;* O-pien Hsien, *P. W. Fang 8066, 8474, 8502, 8703, 6673.*

Closely allied to *P. amoenum* Wallich, differs by narrowly linear pinnae with peculiarly dilated base being widely separated by wingless rachis. In habit it resembles *P. subauriculatum* Blume, but differs in rhizome being not epigaeous, nor glaucous, nor subnaked, in much smaller size and more or less adnate pinnae.

Plate 97. Fig. 1. habit sketch (natural size). 2. lateral pinna, showing venation and position of sori (×3). 3. scale from rhizome (×50).

第 九 十 七 圖

川 水 龍 骨 (水 龍 骨 科)

POLYPODIUM DIELSEANUM C. Christensen

地下莖長，蔓生，頗肥；鱗片瓦覆，深褐色，卵披針形，邊緣具小齒，網眼大而明，膜壁薄；葉間距離大，柄長八至十二粉，稻桿色，光滑；葉體長橢圓卵形，長二十五至三十五粉，基部截形，寬可十五粉，一次羽狀分裂，葉端呈尾形，小葉十二至二十對，開張，披針線形，鈍頭，邊緣具鈍鋸齒，基部膨大而合生於中肋上，紙質，綠色，光滑，葉脈明顯，網脈僅一列；子囊羣一列，光滑。

分布： 四川之南川，峨嵋山及峨邊等地。

本種形體極似友水龍骨 (Polypodium amoenum Wall.)，所不同者爲：小葉細狹，遠隔，小葉間之中肋不具翅，基部膨大；又近於耳形水龍骨 (Polypodium subauriculatum Bl.)，其異點爲：地下莖不爲附生而爲土生，且不呈白粉狀，亦不爲半光滑，無鱗片蓋覆。

圖註： 1. 本種全形(自然大)， 2. 側生小葉 ， 表示葉脈及其子囊羣之位置(放大三倍)， 3. 莖上之鱗片(放大五十倍)。

POLYPODIUM DIELSEANUM C. Christensen

川　水　龍　骨

C. R. Feng Del. et Lith.

PLATE 98

POLYPODIUM NIPONICUM Mettenius

POLYPODIACEAE

POLYPODIUM NIPONICUM Mettenius, Ann. Lugd. Bat. **2:** 222 (1866); Hk. et Bak. Syn. Fil. 341 (1868); Christ, Farnkr. d. Erde 93 (1897); Diels, Nat. Pfl. Fam. **1:** 4. 311 (1899); C. Chr. Ind. Fil. 564 (1906); Ogata, Ic. Fil. Jap. **3:** pl. 140 (1931).

Polypodium Bodinieri Christ, Bull. Acad. Géogr. Bot. (1902) 203.
Polypodium Silvestrii Christ, in Lecomte, Not. Syst. **1:** 58 (1909).
Polypodium longkyense Rosenst. in Fedde, Repert. Sp. Nov. **13:** 134 (1914)

Rhizome rather thick, fleshy, long-creeping, epigaeous, black, subglabrous, covered by whitish blooms; *scales* sparce at the base of stipe, or on the growing tip, fusco-brown, thin, clathrate, linear-subulate from an ovate base, margin subentire from base upwards; *frond* far apart, erect, stipe straminous, naked, 15-20 cm long, lamina pinnatifid nearly to the rachis into about 20 pairs or more, spreading, linear-oblong, entire, acute, close *pinnae*, the lowest often subfree, slightly reduced and deflexed; *texture* papyraceous, both sides densely pubescent with short, whitish, 2-3-celled, soft hairs; color obscurely blackish; *veins* anastomosing in one row of areolae along rachis and costa of pinnae; *sori* rather large, rounded, naked, nearer to the costa than to the margin, which is finely ciliate.

Kwangtung: Lokchong, *N. K. Chun 42660, 42963*. Kiangsi: Kuling, *Dr. Shearer* (1873); *Forbes 752* (1874); *H. H. Hu 2309*. Hupeh: Nanto near Ichang, *A. Henry 2660; 3196;* Ma Kia Keou, *Silvestri 62, 3283*. Chekiang: Ningpo, *Hancock 19*. Kweichow: Pin-fa, *Cavalerie 7239, 7012;* Shih-tsien, *Y. Tsiang 4115;* Tu-shan, *Y. Tsiang 6922;* Tsin-gay, *Bodinier 2031*, March, 1898. Yunnan: Long-ky, *E.E. Maire*. Kwangsi: Miu Shan, Bin-long, *R. C. Ching 5961*. Szechuan: Tchen-kou-tin, *R. P. Farges 2031;* Mapien Hsien, *W. P. Fang 6455*. Kiangsu: I-shing, Hufu, *C. Y. Luh 456; R. C. Ching & C. L. Tso* (1926).

Type from Japan. A fairly common fern in East China, and generally growing over rocks. This is one of the most distinct species of the genus by its rather thick, fleshy subglabrous, epigaeous rhizome covered by whitish blooms, and by its broadly lanceolate, herbaceous lamina, which is densely but shortly pubescent on both sides. As to all these essential characters, this is a very uniform species, although differs more or less in the dimension of leaves. The Chinese plant described twice by Christ and once by Rosenstock as distinct species is perfectly identical with the Japanese type.

Plate 98. Fig. 1. habit sketch (natural size). 2. segment, showing venation and pubescent surface (×3). 3. scale from rhizome (×50).

第 九 十 八 圖

水 龍 骨(水龍骨科)

POLYPODIUM NIPONICUM Mettenius

地下莖頗肥，匍匐於石上甚廣，光滑或鱗片疏生，黑色而被白粉；鱗片通常僅疏生於葉柄基部或莖之幼部，深褐色，狹長，網眼透明；葉疏生，直立，柄稻桿色，光滑，長十五至二十粉，葉體一次羽狀分裂，小葉約二十對，開展，披針形，鈍頭，全緣，基部一對通常較短而下向，紙質，兩面具密絨毛，色稍黑，葉脈不顯，網眼於中肋及主脈兩旁一列；子囊羣形圓，頗大，貼近於主脈。

分布： 廣東，廣西，浙江，江蘇，安徽，江西，湖北，雲南，四川，貴州；日本亦產之。

本種爲本屬特殊之一種，其黑色半光滑之地下莖橫臥於石上，常呈粉白色，葉體兩面密被短絨毛。

圖註： 1. 本種全形（自然大）， 2. 小葉 ， 表明葉脈及其生絨毛之面(放大三倍)， 3. 莖上之鱗片(放大五十倍)。

POLYPODIUM NIPONICUM Mettenius

水　龍　骨

C. R. Feng Del. et Lith.

PLATE 99

POLYPODIUM AMOENUM Wallich

POLYPODIACEAE

POLYPODIUM AMOENUM Wallich, Catal. n. 290 (1828); Mett. Polyp. 80, n. 131 (1875); Hk. et Bak. Syn. Fil. 341 (1868); Diels, Nat. Pfl. Fam. **1:** 4, 311 (1899); C.Chr. Ind. 508 (1906).

Goniophlebium amoena J. Sm. in Hooker, Gen. Fil. ad t. 50 (1840); Bedd. Ferns Brit. Ind. t. 5 (8165); Handb. Ferns Brit. Ind. 317 (1883).
Marginaria amoena Presl, Tent. Pterid. 188 (1816).
Polypodium valdealatum Christ, Bull. Herb. Boiss **7:** 4 (1899).
Polypodium amoenum var. *latedeltoideum* Christ, Bull. Acad. Géogr. Bot. (1907) 142.
Polypodium subamoenum var. *chinensis* Christ, Nuovo Giorn. Bot. Soc. Ital. n.s. **4:** 99 (1897),
Polypodium Bonatianum Brause, Hedwigia **54:** 207 pl. 4. f. L (1914).
Polypodium yunnanense Franch. Bull. Soc. Bot. France **32:** 29 (1885).
Polypodium Duclouxii Christ in Lecomte, Not. Syst. **1:** 14 (1909).
Polypodium amoenum var. *pilosa* Clarke, Journ Linn. Soc. **24:** 417. (1888).
Polypodium amoenum f. *pilosa* Rosenst. in Fedde, Report. Sp. Nov. **13:** 134 (1914).

Rhizome wide-creeping, rather thick, hypogaeous or subepigaeous; *scales* fusco-brown, thin, clathrate, broadly ovate-acuminate; *frond* far apart, stipe 12-30 cm long, firm, erect, naked, straminous, lamina 25-40 cm long, 10-20 cm broad, pinnatifid nearly to the rachis into 15, or more, pairs of spreading acuminate, close segments, with more or less distantly serrate margin; the lowest not shortened, slightly deflexed; *texture* chartaceous, lustrous green, scaly on rachis beneath, naked, or often more or lesss shortly pilose on both or one side; *veins* distinct on both surfaces, areolae uniseriate along the costa, or rarely imperfectly biseriate in broader segments; *sori* medium-sized, far apart, nearer to the costa than to the margin, naked.

Type from Nepal (leg. Wallich). A very common fern in the Himalayas as well as in Southwestern and Central China, extending northwardly to the southern part of Shensi. *P. subamoenum* var. *chinense* Christ is a reduced form common in North China and the Lower Yangtze Valley; *P. yunnanense* Franch. is the same form with lamina more or less pilose on one or, not infrequently, on both sides, and to this *P. Bonatianum* Brause and *P. amoenum* f. *pilosa* Rosenst. should be referred as direct synonyms. *Polypodium valdealatum* Christ, based upon Aug. Henry n. 11315 from Mengtze, Yunnan, differs from the type only in segments provided with gross teeth; *P. Duclouxii* Christ differs in stipe and lamina being tinged wine-red when dried.

Plate 99. Fig. 1. habit sketch (natural size). 2. scale from rhizome (×50).

第 九 十 九 圖

友水龍骨(水龍骨科)

FOLYPODIUM AMOENUM Wallich

地下莖匍匐甚廣，頗肥，土生或亞土生；鱗片疏生，卵形，漸尖頭，深褐色；葉疏生，直立，柄長十二至三十粉，光滑，稻桿色，葉體長二十五至四十粉，寬十至二十粉，一次羽狀分裂，小葉十五對或過之，開張，漸尖，邊緣多少具齒，基部一對通常最長，開張或稍下向，厚紙質，光綠色，中肋下面鱗片疏生，兩面光滑或短毛疏生，葉脈明顯，網脈於中肋及主脈兩側一列，間爲不完全之兩列；子囊羣中大，疏生，貼近主脈，光滑。

分布： 原產西京喜馬拉亞山，然中國中部，西南部及南各省均產之，近於江蘇宜興亦採得之。

本種形體大小不一，其產於陝西南部及中國中部者，形體大概較小，克利脫氏初名之曰 P. subamoenum Clarke var. chinense，有時葉體之一面或二面具甚密短毛，P. yunnanense Franch.; P. amoenum f. pilosa Rosenst 等屬之，然與光滑無毛，形體甚大之模式種無顯著之異同可分。

圖註： 1. 本種全形（自然大）， 2. 莖上之鱗片（放大五十倍）。

POLYPODIUM AMOENUM Wallich

友　水　龍　骨

C. R. Feng Del. et Lith.

PLATE 100

PHYMATODES NIGROVENIA (Christ) Ching

POLYPODIACEAE

PHYMATODES NIGROVENIA (Christ) Ching, Contr. Bot. Inst., Nat. Acad. Peiping **2:** 79 (1933).

Polypodium nigrovenium Ching, Bull. Fan Mem. Inst. Biol. **1:** 150 (1930).

Polypodium shensiense Christ var. *nigrovenium* Christ, Bull. Acad. Géogr. Bot. (1906) 106.

Polypodium Veitchii Baker var. *nigrovenium* Takeda, Notes, R. Bot. Gard. Edinb. **8:** 296 (1915); C. Chr. Acta Horti Gotob. **1:** 102 (1924).

Rhizome rather slender, wide-creeping, about 1 mm thick, densely scaly; *scales* ovate-lanceolate, black, firm, denticulate; *frond* far apart, stipe 3-6 cm long, straminous, naked, lamina oblong-ovate, 5-8 cm long, 4-5 cm broad, cordate at base, simple pinnate *pinnae* 2-4 pairs, the basal pair strongly deflexed and much the longest, the upper ones gradually decrescent, patent or oblique, margin remotely serrulate; *texture* chartaceous, color green, more or less shortly glandular pubescent especially along the midrib and costa above, pale green and glabrous underneath; *veins* distinct, rather regularly anastomosing in two rows of areolae on each side of costa, each provided with one, or two, forked including veinlets; *sori* small, uniseriate, naked.

Hupeh: Changyang Hsien, *E. H. Wilson 5341A* (type). Szechuan: Mt. Omei, *P. W. Fang 2966, 2985* (1928), on cliff and on the trunk of trees.

Habit exactly similar to *Ph. Veitchii* (Baker), differs in black, firm rhizome scales and shortly glandular pubescence on the upper surface of lamina. *Polypodium erythrocarpum* Mettenius from Sikkim-Himalayas appears to be a still closer ally to the present fern, differs in leaves being more densely pubescent on both sides, and scales of a lighter color.

Plate 100. Fig. 1. habit sketch (natural size). 2. a portion of lamina, showing pubescent upperside (×5). 3. a portion of lamina, showing glabrous underside and position of sori (×5). 4. articulated hair from upperside of lamina (magnified). 5. scales from rhizome (×50).

第 一 百 圖

黑鱗茀蕨(水龍骨科)

PHYMATODES NIGROVENIA (Christ) Ching

地下莖細長，蔓生，直徑約一糎，鱗片密覆，卵披針形，色黑，質硬，邊緣具小齒；葉間距離大，柄長三至六粉，稻桿色，光滑，葉身卵橢圓形，長五至八粉，寬四至五粉，基部心臟形，一位羽狀分裂，小葉二至四對，基部一對最長且強度下向，其上各對漸短，開張或上向，邊緣具疏生小鋸齒，紙質，綠色，上面具短毛，尤以中肋及主脈爲甚，下面光滑，淡綠，葉脈明顯，於主脈兩旁成二排有規則之網脈，網眼內具分叉小脈一或二，子囊羣形小，一列，光滑。

分布： 湖北及四川，生於蔭濕之石壁上或林中樹幹上。

本種形體極類費氏茀蕨 (Phymatodes Veitchii) 其不同之點爲：黑色之莖鱗及葉體上面被短毛。

圖註： 1. 本種全形（自然大）， 2. 葉體之一部，表示其上面所生之短毛(放大四倍)， 3. 葉體之一部，表示其光滑下面及子囊羣之位置(放大四倍)， 4. 葉體上面之毛之構造(放大)。

PHYMATODES NIGROVENIA Ching

黑　鱗　茀　蕨

C. R. Feng Del. et Lith.

PLATE 101

MICROLEPIA TENERA Christ

POLYPODIACEAE

MICROLEPIA TENERA Christ in Lecomte, Not. Syst. **1:** 53 (1909); C. Chr. Ind. Fil. Suppl. 51 (1906-12).

Rhizome slender, wide-creeping, about 1 mm thick, subglabrous; *frond* far apart, stipe 25-35 cm long, slender, terete, glabrescent, rufo-straminous; *lamina* oblong-lanceolate or broadly lanceolate, 30-40 cm long, 13-15 cm broad at base, acuminate or caudato-acuminate, base not attenuate, deeply tripinnatifid, *lateral pinnae* about 15-jugate, alternate, the lower ones far apart (about 5 cm apart), the basal ones as long as, or slightly longer than, those next above, 7-8 cm long, 3-4 cm broad at base, patent, the upper middle ones close together, oblique-patent, subfalcate, about as long as the lower ones, those above the upper two-thirds are gradually shortened below the pinnate apex, all very shortly petiolate (petiole about 2 mm long), oblong-lanceolate, acuminate, base equal, *secondary pinnules* in the lower pinna about 10-jugate, patent, the basal ones of equal length, as long as those next above, 2-2.5 cm long, 1 cm broad, base subequal, i. e. the posterior side cut away, oblong, obtusish, sessile but never adnate; *ultimate pinnules* in the lower pinnae about 6-8-jugate, close, oblique, 5-7 mm long, decurrent, apex roundish, 3-4-lobulato-incised, or entire on the lower side, 2-3 bluntly toothed on the upperside; *veins* in the ultimate pinnule pinnate, one to each lobe or tooth, veinlet simple, fine, but distinct; *rachis* and *rachilets* moderately strigose-hairy, both sides sparcely hirsute on costules, veins and veinlets; *texture* thin herbaceous, color light green; *sori* small, one to each ultimate pinnule, or to each segment in lower pinna, borne on the anterior veinlet, falling short from the margin, *indusium* small, green, subglabrous, membranaceous, of the *lastreoid* type, i. e. reniform, attached by a deep sinus and free all round.

Yunnan: Szemeo, *Henry 13155A* (type), *13155;* Mengtze, *Hancock 75.* Kweichow: Houang-tsa-pa, *Cavalerie 7288.*

One of the most distinct species of the genus, endemic in Southwestern China. The slender habit, thin herbaceous texture only sparcely strigose on both surfaces, the widely separated and very shortly petiolate lower pinnae with almost equal base, and the small, thin, green indusium of a lastreoid type are the outstanding characters of this species. The general habit, thin herbaceous texture and the small, greenish, membranaceous indusium of a lastreoid type tend to make this fern appearing so alike *Dryopteris flaccida* (Blume) O. Ktze that it would have been strongly suspected to be a form of that species also known in the locality, had it not been for its primitive solenostelic vascular structure in the rhizome and its terminal sori.

Plate 101. Fig. 1. habit sketch (natural size). 2. an ultimate pinnule from the lower pinna (×12).

第一百零一圖

嫩　毛　蕨（水龍骨科）

MICROLEPIA TENERA Christ

地下莖細長，匍匐甚廣，粗約一糎，頗廣滑，葉疏生，柄長二十五至三十五粉，細圓，紅稻桿色，葉體闊披針形，長三十至四十粉，基部寬十三至十五粉，漸尖頭，不呈楔形，三回分裂，一回裂片約十五對，位于下部者疏生，長七至八粉，寬三至四粉，基部等形，具極短之柄，中肋，主脈，側脈兩邊均被疏毛，葉質薄，色綠；子囊羣頂生於葉脈，形小，通常每裂片一個，蓋膜質，綠色，腎形以缺刻着生，邊緣分離。

分布：　雲南，貴州。

本種之形態及其子囊羣蓋絕類產于同地之 Dryopteris flaccida (Bl.) O. Ktze.，然其莖內具單筒形之維管束及其子囊羣頂生於葉脈，易於識別。

圖註：　1. 本種全形（自然大），　2. 三次裂片（放大十二倍）。

MICROLEPIA TENERA Christ

嫩　毛　蕨

C. R. Feng Del et Lith.

The Chronicle Press

ICONES FILICUM SINICARUM

BY

REN-CHANG CHING, B. S.

FASCICLE 3

靜生生物調查所
江西省農業院
廬山森林植物園主任秦仁昌編纂

中國蕨類植物圖譜
第三卷

靜生生物調查所印行

中 國 蕨 類 植 物 圖 譜

ICONES FILICUM SINICARUM

BY

REN-CHANG CHING, B. S.

KEEPER

THE LU-SHAN ARBORETUM AND BOTANICAL GARDEN

OF

THE FAN MEMORIAL INSTITUTE OF BIOLOGY AND

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TO

PROFESSOR SUNG-SHU CHIEN

HEAD OF THE BOTANICAL DIVISION, BIOLOGICAL LABORATORY OF

THE SCIENCE SOCIETY OF CHINA

AS ONE OF THE FOREMOST MODERN CHINESE BOTANISTS

IN RECOGNITION OF

HIS EXEMPLARY WORK AS A TEACHER

UNDER WHOSE DELIGHTFUL GUIDANCE

THE AUTHOR FIRST BEGAN OVER TWENTY YEARS AGO

TO LEARN BOTANY IN ITS VARIOUS PHASES

THIS THIRD FASCICLE OF ICONES FILICUM SINICARUM

IS RESPECTFULLY DEDICATED

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105. Humata assamica, 高山陰石蕨

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PLATE 101

WOODSIA MACROCHLÆNA Mettenius

POLYPODIACEÆ

WOODSIA MACROCHLÆNA Mettenius ex Kuhn, Journ. Bot. (1868) 270; Linnæa **36**: 126 (1869); C. Chr. Ind. Fil. 657 (1905); Suppl. III. 195 (1934); Fomin, Fl. Sib. et Orient. Extr. **5**: 10 c. fig. (1930); Ching, Sinensia **3**: 143. **1932.**

Woodsia insularis Hk. et Bak. (non Hance, 1861) Syn. Fil. 47 (1867).

Woodsia Brandtii Franch. et Sav. Enum. Pl. Jap. **2**: 205, 616 (1879).

Woodsia japonica Makino, Bot. Mag. Tokio **18**: 134 (1904); Ogata, Ic. Fil. Jap. **3**: t. 149 (1930).

Woodsia sinuata Makino, Bot. Mag. Tokio **11**: 64 (1897, non 1904); Christ, Bull. Acad. Géogr. Bot. **20**: 157 (1909, non 1902).

Woodsia frondosa Christ in Fedde, Repert.Sp. Nov. **5**: 12 (1908).

Rhizome short, erect, densely radicose, apex densely clothed in bright brown, lanceolate, acuminate, sparcely fimbriate *scales*; *fronds* fasciculated, stipe 2-10 cm long, straminous or brownish, scaly at base, hirsute upwards, lamina 5-12 cm long, 2-4 cm broad, pinnate under pinnatifid acutish apex, *pinnæ* 5-12-jugate, the lower ones free, subsessile, the upper ones adnate, the basal pair springs from the prominent articulation of stipe, always somewhat smaller than those above, deflexed, ovate-deltoid, with more or less auriculated anterior base, the middle pinnæ 1.2-2 cm long, oblong-ovate, adnate with wingless rachis between contiguous pairs, lobato-sinuate or pinnatifid into oblong sinuate segments, rachis and both sides moderately clothed in ferruginous needle-like, articulated appressed hairs, no trace of scales; *texture* herbaceous, soft; *veins* in segments pinnate; *sori* large, terminal on veinlets, 1-2 to each lobe, or 4-6 to each segment, *indusium* cup-shaped, large, membranaceous, setose hairy, irregularly 4-6 erosed at top; *sporangia* shortly stipitate.

Shantung: Chefoo, *Schottmuller* (type), August, 1861; *B. Drug 285*, Sept. 17, 1907; *A. C. Maingay 13*, August-Sept. 1862; *Cowdry 644* (1920); *Forbes 2233* (1881); Wei-hai-wei, *C. G. Matthew*, Sept. 1906. Shansi: *E. Licent* (without locality). Manchuria: *Swinhæ 6516* in herb. Hance. Port Arthur: *Miss Möller*, Oct. 28, 1928.

Corea: Ouen San, *U. Faurie 101* (type of *W. frondosa*). Quelpært: *U. Faurie 5610, 2172* (f. typica).

Japan: Prov. Chochiou, *Kramer 1569* (type of *W. Brandtii*); *C. G. Matthew*, July 23, 1906.

For further comment and discussion about this distinct but hitherto much neglected fern, readers are referred to my paper on the genus *Woodsia* in Sinensia **3**: pp. 143.

Plate 101. Fig. 1. Habit sketch, f. typica (natural size). 2. Upper middle pinna, showing venation and sori (× 6). 3. Sorus with indusium (× 20). 4. the same, cut vertically (× 20). 5. Scales and hair from the base of stipe (× 16). 6-7. Hairs from rachis and leaf surfaces (× 30). 8. Basal pinnae attached to the articulation of stipe (× 20). 9. Sporangium (greatly enlarged). 10. Spores (greatly enlarged).

第一百零一圖

大囊岩蕨(水龍骨科)

WOODSIA MACROCHLAENA Mettenius

地下莖短而直立，頂部具櫚黃色之披針形密鱗片；葉簇生，柄長二至十粉，淡黃櫚色，基部具鱗片，上部遍被剛毛，葉體長五至十二粉，寬約二至四粉，一回羽狀分裂，下部小葉幾無柄，基部一對着生於葉柄頂部之節上，較小，下向，上部小葉與中肋合生，長約一·二至二粉，楕圓卵形，波狀分裂，或深裂，中肋及兩面被短剛毛，不具鱗片，紙質；葉脈羽狀分裂；子囊羣形圓，着生於側脈之頂，蓋爲圓杯形，膜質，被剛毛，頂部開裂，口具四至六數鋸齒。

分布：　山東北部，河北，陝西，東三省；朝鮮及日本亦產之。

本種爲亞洲東北部特有之種，最初在山東煙台發現，現爲華北常見之品。

圖註：　1. 本種全形(自然大)，　2. 中部小葉，表明其葉脈及子囊羣着生狀(放大六倍)，　3. 子囊羣與蓋(放大二十倍)，　4. 同上，垂直切開(放大二十倍)，　5. 葉柄基部之鱗片及剛毛(放大十六倍)，　6-7. 葉體上之剛毛（放大三十倍)，　8. 基部一對小葉着生於葉柄之節上（放大二十倍)，　9. 子囊(高倍放大)，　10. 胞子（高倍放大）。

WOODSIA MACROCHLAENA Mettenius

大 囊 岩 蕨

C. R. Feng Del. et Lith.

PLATE 102

WOODSIA MANCHURIENSIS Hooker

POLYPODIACEÆ

WOODSIA MANCHURIENSIS Hooker, 2nd. Cent. Ferns t. 98 (1861); Syn. Fil. 48 (1867); Milde, Fil. Europ. et Atlant. 168 (1867); Christ, Farnkr. d. Erde 283 (1897); Diels in Engl. u. Prantl: Nat. Pflanzenfam. **1**: 4. 161 (1899); C. Chr. Ind. Fil. 657 (1905); Fomin, Fl. Sib. et Orient. Extr. **5**: 9 (1930); Ogata, Ic. Fil. Jap. **5**: t. 249 (1933).

Diacalpe manchuriensis Trev. Nuov. Giorn. Bot. Soc. Ital. **7**: 160 (1875).

Physematium manchuriensis Nakai, Bot. Mag. Tokio **39**: 176 (1925).

Woodsia insularis Hance, Ann. Sci. Nat. IV. **15**: 228 (1861); Diels in Engl. u. Prantl: Nat. Pflanzenfam. **1**: 4. 161 (1899).

Rhizome short, erect; *scales* light brown, thin, ovate-lanceolate, acuminate, clothing the apex; *fronds* cæspitose, stipe short, terete, 2-5 cm long, glossy, straminous, sparcely scaly, lamina lanceolate, 10-30 cm long, 2-4 cm broad, or even broader, membranaceous, clear light green, glabrous on both sides, deeply bipinnatifid under pinnatifid acuminate apex, rachis glabrous, deeply sulcate above; *pinnæ* 15-40-jugate, oblique, sessile, the lower ones much abbreviated and opposite, the upper ones alternate, 1-3 cm long, oblong-obtuse, base truncate, deeply pinnatifid; *segments* 5-8-jugate, oblique, oblong-ovate, obtuse, entire or slightly sinuate; *veins* pinnate, 2-3-jugate, veinlets fine, oblique, fall short of the margin with enlarged apex; *sori* large, on the anterior basal veinlets of each segment, below the sinus, *indusium* large, globose, gray, thin membranaceous, opening with a toothed edge of the contracted mouth at the top.

Shantung: Chefoo, *Hancock 11*; *W. R. Carles*, Sept. 1889; *E. Faber 1060*, Oct. 1898; Tai-Shan, *Jacob 39*, July 11, 1923; *K. S. Hao 1730*, July 10, 1931 (partly). Manchuria: *C. Wilford 1094* (type), July-August, 1859; *H. E. M. James*, May-August, 1886; *Komarov 2*; Chien-shan, *J. Ross 594* (1877); Kirin, *F. H. Chen 201* (1931). Hopei: Tsang-ho, *M. S. Clemens 6038A*, August 9, 1913; Changli, *M. S. Clemens*, Oct. 13, 1913.

Also Corea and Japan.

One of the most distinct species of the subgenus *Physematium*, characterized by light green, membranaceous glabrous leaves and large, membranaceous sac-like indusium opening by the contracted mouth at the top. Its occurence in North China is said to be by no means common. *W. insularis* Hance, based upon Clarke's plant from Sagalien, only represents a small form of this species, evidently growing in a dry situation.

Plate 102. Fig. 1. Habit sketch (natural size). 2. Pinna, showing venation and position of sori (× 5). 3. Sorus with one side of the indusium removed (× 50). 4. Spores (greatly enlarged). 5. Scale from rhizome (× 30).

第一百零二圖

滿洲岩蕨(水龍骨科)

WOODSIA MANCHURIENSIS Hooker

地下莖短而直立，端具櫧黃色卵披針形之鱗片；葉簇生，柄長二至五粉，呈稻桿色，有光澤，近基部略具鱗片，葉體披針形，長十至三十粉，寬二至四粉，或較寬，薄紙質，淡綠色，兩面光滑，二回羽狀深裂，小葉十五至四十對，斜出，無柄，下部數對較小，對生，上部小葉長一至三粉，互生，橢圓形，鈍頭，基部亞截形，羽狀深裂，裂片五至八對，斜出，卵橢圓形，鈍頭，全緣，或呈波形；葉脈羽狀分叉，二至三對，頂稍膨大，不達葉緣；子囊羣大，着生於上方基部葉脈，蓋爲圓球形，薄膜質，頂部開一小口。

分布： 山東，河北，東三省；朝鮮及日本亦產之。

本種之特點爲其光綠色薄紙質之葉體及其球圓形膜質之子囊羣蓋。

圖註： 1. 本種全形(自然大)， 2. 小葉(放大五倍)， 3. 子囊羣及其蓋(放大五十倍)， 4. 胞子(高倍放大)， 5. 地下莖上之鱗片(放大三十倍)。

WOODSIA MANCHURIENSIS Hooker

滿 洲 岩 蕨

C. R. Feng Del. et Lith.

PLATE 103

DAVALLIA MARIESII Moore

POLYPODIACEÆ

DAVALLIA MARIESII Moore ex Baker, Ann. Bot. **5**: 201 (1891); C. Chr. Ind. Fil. 212 (1905); Nakai, Bot. Mag. Tokio **39**: 120 (1925).

Davallia bullata Franch. et Sav. Enum. Pl. Jap. **2**: 208 (1877); Christ in Warburg, Monsunia **1**: 86 (1900).

Rhizome thick, 7 mm across, long-creeping, densely scaly; *scales* large, imbricate, lanceolate from broadly ovate base, fimbriate, ferruginous on the growing tip, but whitish on the old part; *frond* far apart, articulated at base, stipe 6-10 cm long, straminous, naked, terete underneath, grooved on the upper side, lamina deltoid-pentagonous, 8-14 cm long and broad, shortly acuminate, tripinnate; *pinnæ* 6-7-jugate, rather shortly petiolate, the basal ones much the largest, deltoid, 5-7 cm long and broad; *pinnules* 6-7-jugate, shortly petiolulate on narrowly winged rahilet, the lower basal ones the largest, oblong-ovate, 2.5-4 cm long, 1-1.5 cm broad, ovate-oblong, base cuneate-decurrent, deeply pinnatifid into 5 linear, blunt or bifid uni-nerved segments; *texture* coriaceous, glabrous on both sides; *indusium* brown, tubular, coriaceous, twice as long as broad, overtopped by two horns of generally unequal length.

Shantung: Chefoo mountains, *Faber 58*; *Carles* (1888); *R. Zimmermann 545*, May 5, 1902; *Maingay 5* (1862); *Hancock 5*; Tsingtau, Lao Shan, *F. H. Sha 528* in herb. Shantung Univ., July 18, 1932; Yuchiaho, Mooping, *T. N. Liou 905*, May 27, 1930. Kiangsu: Haichow, Hai-shan, *Jacob 7, 86, 890*.

Japan: Ex Hort. Veitch (type); Nagasaki, *Maximowicz 116* (1863).

Corea: *Taquet 2330*; Söul, *Warburg*.

Formosa: *Hancock 115, 119*.

This fern is a native of the northeastern Asia and a close relative of *D. bullata* Wall. of Eastern India, which differs, however, in larger and less divided frond, shorter, rufo-brown and very shaggy scales with scarious margin and in more shortly petiolate basal pinnæ. The difference in the scale between this and the Indian species was first noted by Moore himself, as shown by an enlarged sketch on the type sheet in the herbarium at Kew.

Plate 103. Fig. 1. Habit sketch (natural size). 2. Ultimate pinnule, showing venation and shape of indusium (× 10). 3. Scale from rhizome (× 10).

第一百零三圖

海州骨碎補(水龍骨科)

DAVALLIA MARIESII Moore

地下莖肥大，肉質，蔓生，橫行，具披針形之密鱗片，長達一粉餘，灰白色或白銹黃色；葉散生，葉柄長六至十粉，稻桿色，光滑，葉體呈五角形，長寬各八至十四粉，尖頭，三回分裂，一回小葉六至七對，具短柄，基部一對最大，長寬各五至七粉，二回小葉六至七對，具短柄，中肋具狹翅，基部一對較大，卵糯圓形，長二·五至四粉，寬一至一·五粉，自基部漸狹，深裂，裂片約五數，線形，鈍頭，或二裂，具一葉脈；革質，兩面光滑；子囊羣近於葉緣，蓋爲管狀，革質，黃色，長二倍於寬，端部具小角狀葉質。

分布：山東及江蘇北部沿海；日本，朝鮮及台灣亦產之。

此爲亞洲東北部特有之種，與印度北部產之Davallia bullata Wall. 相似，然葉體形小而分裂較甚，莖上鱗片亦較長，且呈瓦覆狀，故得區別。

圖註： 1. 本種全形(自然大)， 2. 末回小葉，表示其葉脈及子囊羣蓋形狀(放大十倍)， 3. 地下莖上之鱗片(放大十倍)。

DAVALLIA MARIESII Moore

海 州 骨 碎 補

C. R. Feng Del. et Lith.

PLATE 104

DAVALLIA ORIENTALIS C. Christensen

POLYPODIACEÆ

DAVALLIA ORIENTALIS C. Christensen ex Wu, Bull. Dept. Biol. Sun Yatsen Univ. No. **3**: 104 t. 43 (1932); No. **6**: 4 (1933); Ind. Fil. Suppl. III. 68 (1934).

Davallia elegans Hk. (non Sw, 1801) Florul. Hongk. in Journ. Bot. (1857) 333; Syn. Fil. 95 (1867); Benth. Fl. Hongk. 461 (1861).

Davallia divaricata Christ (non Bl. 1828), Bull. Soc. Fr. et Belg. **28**: 260 (1898); Dunn & Tutch. Fl. Kwangt. & Hongk. 337 (1912); Merr. Enum. Hainan Pl. in Lingnan Sci. Journ. **5**: 11 (1927).

Davallia denticulata Merr. l.c. (non Mett. 1867).

Rhizome thick as a small finger, fleshy, wide-creeping, densely clothed in bright brown lanceolate *scales* to 1 cm long or longer; *frond* far apart, stipe glabrous, brown, terete below, deeply bisulcate above, 30-60 cm long, 4 mm thick at the base, lamina ample, 60-90 cm each way, deltoid, 4-pinnate or 5-pinnatifid; *pinnæ* about 10-jugate, alternate, long-petiolate, the basal ones much the largest, deltoid, 20-30 cm long, 12-18 cm broad, acuminate, the upper ones gradually smaller, the middle ones broadly lanceolate, 15 cm long, 6 cm broad, with about 10 pairs of *pinnules*, which are petiolulate, the anterior basal one much the largest, deltoid, acuminate, the others smaller with unequal base; *pinnules* of 2nd. order sessile, 1-1.5 cm long, pinnatifid into elongate denticulate *segments*; *texture* rigidulously coriaceous, glossy; *veinlets* in the segments oblique, one to each tooth; *sori* submarginal, one to each tooth, *indusium* tubular, twice as long as broad, apex truncate, with projecting teeth above.

Hainan: Yih Tsoh Mao, *F. A. McClure 9717* (type); Nodoa, Lin Fa Ling, *W. Y. Chun 1799*; *McClure 7919*; Five Finger Mt., *McClure 8463, 8678*; Hung Mo Shan, *W. T. Tsang 17771*. Kwangtung: Man Sei Ho, *Tutcher10505*; Lohfau Shan, *C. Ford* (1883); *N. K. Chun 41276*; Swatow, *Dalziel*, Sept. 1899. Hongkong: *Champion 552*; *Matthew 72* (1905); May 18, 1904; April 12, 1907; *C. Wright* (1853-56); Lantao Island, *C. L. Tso* (1929); *Borther* (1856); *Alexander*. Kwangsi: Yao Shan, *S. S. Sin 3698*, Sept. 26, 1928, Lin-yen Hsien, outside of the south city gate, *R. C. Ching 6665, 6761*; Seh Fang Dar Shan, on the border of Tonkin, *R. C. Ching 1860*. Yunnan: Szemeo, *Henry 13141*.

Tonkin: Mt. Bana, *Clemens 3855*; environs de Chobo, *Pételot*, April 14, 1926; Chapa, *Pételot 3306*; Cao-Bang, *Pételot 2740*; *Billet 4182*; *Bon 3257*.

The present species has hitherto been generally considered as identical with the Malesia-Polynesian *D. divaricata* Bl. from which it differs in thinner leaves, greenish color, even when dried, much longer and more ascending soriferous veinlets and in longer, narrower indusium with exerted sterile margin as high as the sorus itself.

Swartz cited Canton as the type locality for his *D. elegans* (Syn. Fil. pp. 132, 347), but this is certainly wrong, for his species, actually based upon Thunberg's plant from Java, agrees exactly with *D. denticulata* of Malesia-Polynesia, not known from China. The same mistake was since repeated by Hooker, Bentham and other authors on the flora of South China.

Plate 104. Fig. 1. Habit sketch (natural size). 2. pinnule of 2nd. order (× 8). 3. Sorus, with part of indusium removed (× 25). 4. Scale from rhizome (× 12).

第一百零四圖

華南骨碎補(水龍骨科)

DAVALLIA ORIENTALIS C. Christensen

地下莖大如小指，肉質，蔓生，橫行，具光亮銹黃色之披針形密鱗片，長逾一粉；葉散生，柄長三十至六十粉，自基部以上光滑，黃褐色，葉體大，長寬約各六十至九十粉，呈三角形，漸尖頭，四回羽狀分裂，一回小葉約十對，互生，具長柄，基部一對最大，長三角形，長二十至三十粉，寬十二至十八粉，漸尖頭，上部各對漸小，中部一對爲寬披針形，長十五粉，寬六粉，具二回小葉約十對，三回小葉長約一·五粉，無柄，羽狀，深裂，末回裂片細長，有鋸齒；葉係亞革質，光滑，葉脈細密，分離，每一數至一鋸齒；子囊羣近於葉緣，每鋸齒一個，蓋管狀，長二倍於寬，端呈截形，其上具小角形之葉質。

分布： 廣東，廣西，香港，瓊洲島及雲南南部；交趾安南亦產之。

本種爲亞洲南部大陸特有之種，形體極類馬萊羣島所產之 Davallia divaricata Bl. 所不同者，爲其較薄之葉質，子囊羣蓋較狹長，子囊羣着生之葉脈亦較長而幾爲向上。

圖註： 1. 本種全形(自然大)， 2. 二回小葉(放大八倍)， 3. 子囊羣及一部分之蓋（放大二十五倍)， 4. 地下莖上之鱗片(放大十二倍)。

DAVALLIA ORIENTALIS C. Christensen

華南骨碎補

C. R. Feng Del. et Lith.

PLATE 105

HUMATA ASSAMICA (Bedd.) C. Christensen

POLYPODIACEÆ

HUMATA ASSAMICA (Bedd.) C. Christensen, Contr. U. S. Nat. Herb. **26**: 293 (1931); Ind. Fil. Suppl. III. 112 (1934).

Acrophorus assamicus Bedd. Ferns Brit. Ind. t. 94 (1866).

Leucostegia assamica J. Sm. Hist. Fil. 84 (1875); Bedd. Handb. Ferns, Brit. Ind. etc. 51 (1883); Suppl. 13 (1892).

Davallia assamica Baker in Hk. Syn. Fil. ed. 1. 452 (1868); ed. 2. 467 (1873); Clarke, Trans. Linn. Soc. II. Bot. **1**: 445 (1880).

Davallia micans Mett. ex Baker in Hk. Syn. Fil. ed. 1. 95 (1867).

Humata micans Diels in Engl. u. Prantl: Nat. Pflanzenfam. **1**: 4. 209 (1899).

Rhizome thick, wide-creeping, densely scaly; *scales* large, lanceolate, acuminate, hair-pointed, spread, silvery-brown, denticulate; *frond* far apart, stipe slender, firm, naked, rufo-straminous, 5-10 cm long, lamina lanceolate, 15-28 cm long 5-7 cm broad, acuminate, base hardly narrowed, tripinnatifid; *pinnæ* 20-30-jugate, alternate, lanceolate-falcate, shortly petiolate, unequal at base, the basal ones deltoid-lanceolate, with subequal and cordate base, to 4 cm long, 2.5 cm broad at the base, acuminate, rachis narrowly winged from the middle upward; *pinnules* 7-10-jugate, sessile, ovate-oblong, 1.2 cm long, 5-8 mm broad, the lower ones deeply pinnatifid with 5-7 *segments*, of which the lowest are pinnatifid, the upper ones 3-2-dentate, rachilets with a few large, brown, broadly ovate appressed scales underneath, surfaces naked, glossy in living state; *texture* coriaceous; *veinlets* hardly distinct, pinnate or bifurcate in segment; *sori* submarginal in ultimate lobes, mostly with a horn above, *indusium* suborbicular, broader than deep, glossy, rounded and free all around, except the broad base which is attached to the leaf tissue.

Yunnan: Shweli-Salween divide, *G. Forrest 24500*; South of Tengyueh, *G. Forrest 26681*, June, 1925; between Tengyueh and the Burmese border, *J. F. Rock 7312*; between Kambaiti and Tengyueh, *J. F. Rock 7580*; Salwin, *H. Handel-Mazzetti 9564*.

Bothan: Mishee, *Griffith*; *Jordon* (type).

Munipore: *Clarke*; and also Upper Burma: *Forrest 26604*.

This distinct species which was previously known only from Bothan and Munipore of North-western India, is very near *H. Griffithiana* of the same region, differing mainly in its lanceolate and shortly petiolate fronds and in the presence of a few large broadly ovate scales on the lower part of rachilets underneath. Our plate based upon Forrest No. 26681.

The genus *Humata* is closely related to both *Davallia* and *Leucostegia*, from the former it differs chiefly in thick leathery, shining, pale-colored reniform or suborbicular indusium attached only by its broad base, generally less divided frond of more rigid texture and the pale-colored scales on the rhizome, from the latter, in somewhat dimorphous and less divided frond of more thick texture and glossy leathery indusium. In fact, its affinity to *Leucostegia* seems to be too close to warrant a generic separation, particularly when the present species is taken into consideration.

Plate 105. Fig. 1. Habit sketch (natural size). 2. Pinnule from the middle pinna (× 8). 3. Scale from rhizome (× 14). 4. Scale from the lower part of rachilet underneath (× 14).

第一百零五圖

高山陰石蕨(水龍骨科)

HUMATA ASSAMICA (Bedd.) C. Christensen

地下莖肥厚，肉質，具銀灰色披針形之大鱗片；葉散生，柄細長，長五至十粉，光滑，葉體披針形，長十五至二十八粉，寬五至七粉，漸尖頭，基部與上部幾等寬，三回羽狀深裂，一回小葉二十至三十對，互生，鐮狀披針形，具短柄，基部不等形，長達四粉，基部寬二·五糎，漸尖頭，中肋上部具狹翅，二回小葉七至十對，無柄，卵楕圓形，長一·二粉，寬五至八糎，其位於下部者羽狀深裂，裂片五至七數，具鋸齒二至三數；葉脈不甚明顯，羽狀分叉；革質，有光澤，中肋下部下面具卵圓形之褐色大鱗片，餘均光滑；子囊羣近於葉緣，蓋爲半圓形，光亮，僅基部着生。

分佈：　雲南及印度北部。

本種原產於印度北部，最近在雲南西部發現，其異於 Humata Griffithiana Hk. 者，爲其長披針形之葉體及其一回小葉中肋下部下面所具之卵圓形褐色大鱗片是也。

圖註：　1. 本種全形(自然大)，　2. 二回小葉(放大八倍)，　3. 地下莖上鱗片(放大十四倍)，　4. 一回小葉中肋下部下面所具之鱗片(放大十四倍)。

HUMATA ASSAMICA (Bedd.) C. Christensen

高 山 陰 石 蕨

C. R. Feng Del. et Lith.

PLATE 106

ARTHROPTERIS OBLITERATA (R. Br.) J. Smith

POLYPODIACEÆ

ARTHROPTERIS OBLITERATA (R. Br.) J. Smith, Cat. Cult. Ferns 62 (1827); C. Chr. Ind. Fil. 63 (1905); v.A.v.R. Handb. Mal. Ferns 155 (1908); Bonap. Notes Pterid. Pt. **14**: 103 (1923); Merr. Enum. Hainan Pl. in Lingnan Sci. Journ. **5**: 11 (1927).

Nephrodium obliteratum R. Br. Prod. Fl. Novae-Holl. 148 (1810).

Aspidium obliteratum Spr. Syst. Veg. **4**: 99 (1827).

Nephrolepis obliterata J. Sm. Journ. Bot. **4**: 197 (1841); Hk. Sp. Fil. **4**: 154 (1862); Bedd. Ferns S. Ind. t. 251 (1864).

Nephrolepis ramosa Moore, Ind. Fil. 105 (1858); Hk. et Bak. Syn. Fil. 301 (1867); Bedd. Handb. Ferns, Brit. Ind. etc. 285 (1883).

Arthropteris ramosa Mett. Novora Exp. Bot. **1**: 214 (1876); Diels in Engl. u. Pratl: Nat. Pflanzenfam. **1**: 4. 208 (1899).

Rhizome slender, wide-creeping on the trunk of trees, to several m. tall, sparcely scaly; *frond* far apart, alternate, stipe 1-2 cm long, articulated to a prominent pseudopodium, lamina lanceolate, 20-40 cm long, 4-6 cm broad, simple pinnate under the distinct smaller end-pinna; *pinnæ* numerous, alternate, 3-4 cm long, 1 cm broad, the lower ones smaller, deflexed, lanceolate-oblong, with deltoid auricle at the anterior base, obliquely cut away at the posterior base, apex bluntish or roundish, margin undulate-crenate towards apex, subsessile and articulated to the rachis, which is densely pustulately hirsute above with thick rod-like unicellular clear hairs, the same type of hairs also sparcely present on the midrib above; *texture* herbaceous; *veins* distinct, forked, ended some distance below the margin; *sori* round, terminating the anterior basal veinlet of each group, *indusium* reniform, reddish-brown, persistent.

Hainan: Nodoa, Sha Po Shan, *F. A. McClure 8157* (1921). Kwangsi: Bako Shan, south of Pei-seh, *R. C. Ching 7530* (1928).

Tonkin: Cao-Bang, *Bourret 132*.

Also Malesia-Polynesia, Ceylon, the Philippines, Australia and tropical Africa.

A very variable fern in respect to the shape and size of pinnæ; very rare on the mainland, R. C. Ching No. 7530 and Bourret No. 132 are the only specimens seen by me.

The genus *Arthropteris* now comprising about 10 species chiefly in the tropical Asia, has been generally considered as closely related to *Nephrolepis* Schott; and this is true only in so far as the articulated pinnæ, type of venation and soral conditions are concerned, but in point of anatomical features, and particularly, the type of stelar structure in rhizome, it shows a marked difference from that genus, nor is it comparable with *Oleandra* Cav. in this respect, to which it is also held as a close relative by workers to-day. Meanwhile, I consider it one of the fern *genera incertæ sidis*.

Plate 106. Fig. 1. Habit sketch (natural size). 2. Pinna, showing venation and sori (× 2). 3. Sorus with indusium (× 16). 4. Scale from scandent rhizome (× 40).

第 一 百 零 六 圖

籐蕨(水龍骨科)

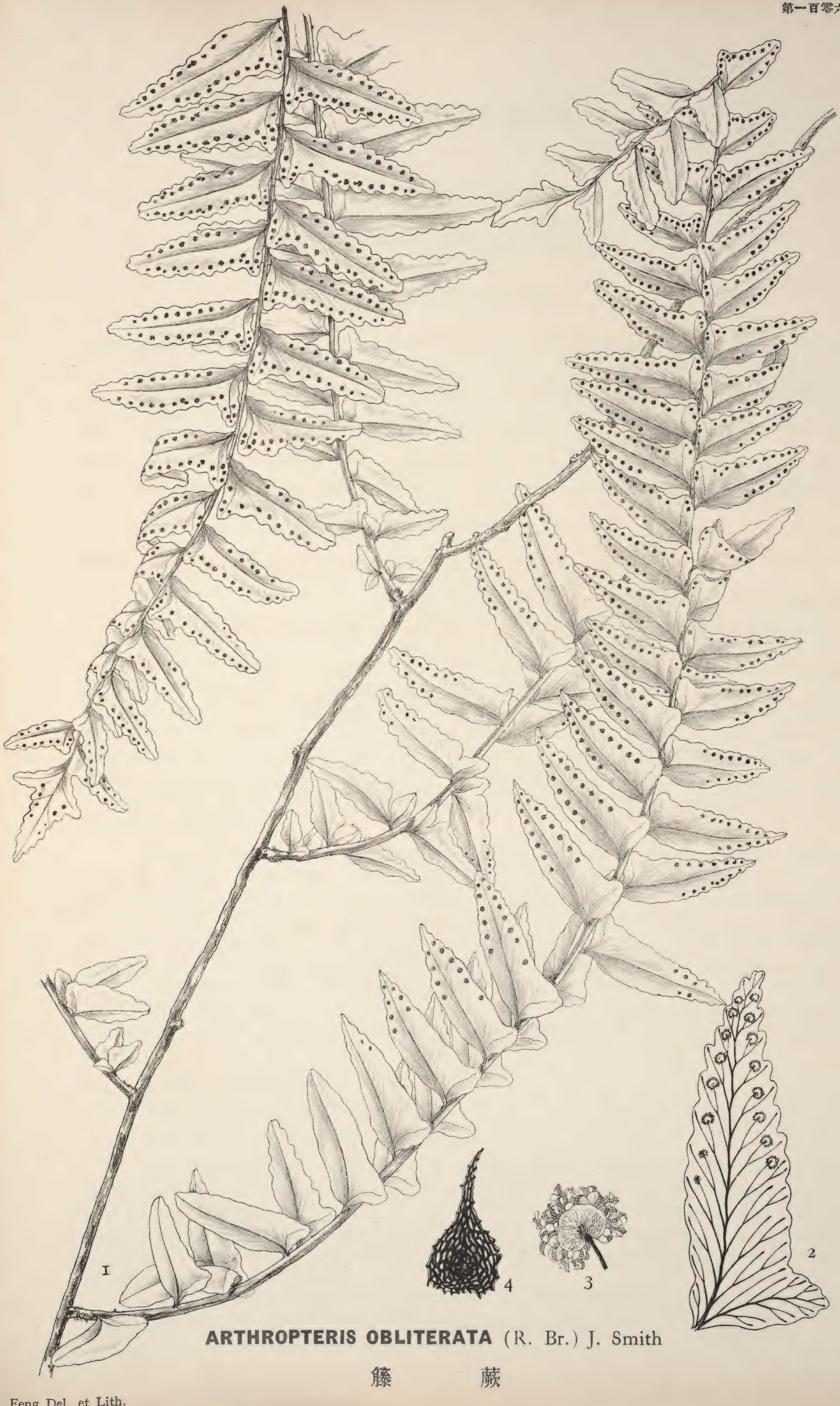
ARTHROPTERIS OBLITERATA (R. Br.) J. Smith

地上莖蔓生，緣樹幹上升，高可達十數米；鱗片疏生；葉散生，葉柄長一至二粉，節形着生於蔓莖上，葉體披針形，長二十至四十粉，寬四至六粉，一回奇數羽狀分裂，小葉數十對，長三至四粉，寬約一粉，頂部一葉與下部數對較小，橢圓披針形，上基部耳形突出，下基部呈斜形，鈍頭或圓頭，葉緣呈波狀，幾無柄，節狀着生於具密腺毛之中肋，兩面光滑，惟主脈上面略具腺毛；葉脈明顯，分叉，不達於緣葉，紙質；子囊羣圓形，着生於每一上基部葉脈之端，蓋腎形，紅褐色。

分布： 廣布於安南，交趾，馬萊及南洋羣島，菲列濱，澳大利亞及菲洲熱帶；最近發現於我國之瓊洲島及廣西西南部之八角山，然不多見也。

本種爲本屬在亞洲熱帶大陸僅見之種，其特異點爲其籐形之地上莖緣樹幹或懸崖上升，葉與小葉均節狀着生，易於脫落是也。

圖註： 1. 本種全形(自然大)， 2. 小葉，表明其葉脈及子囊羣之位置（放大二倍）， 3. 子囊羣（放大十六倍）， 4. 蔓性莖上之鱗片（放大四十倍）。



ARTHROPTERIS OBLITERATA (R. Br.) J. Smith

藤　　蕨

C. R. Feng Del. et Lith.

PLATE 107

CAMPTOSORUS SIBIRICUS Ruprecht

POLYPODIACEÆ

CAMPTOSORUS SIBIRICUS Ruprecht, Distr. Crypt. Vasc. Ross. 45 (1845); Ledeb. Fl. Ross. 522 (1853); Milde, Fil. Europ. et Atlant. 95 (1867); Franch. Pl. David. **2**: 230 (1887); Komarov, Fl. Mansh, **1**: 177 (1901); C. Chr. Ind. Fil. 166 (1905); Kümmerle, Ann. Mus. Hungar. **24**: 90 (1926); Ogata, Ic. Fil. Jap. **2**: t. 59 (1929); Fomin, Fl. Sib. et Orient. Extr. **5**: 139 (1930).

Scolopendrium sibiricum Hk. 2nd. Cent. Ferns t. 35 (1861); Sp. Fil. **4**: 4 (1862); Syn. Fil. 248 (1867); Christ, Farnkr. d. Erde 218 (1897); in Warburg, Monsunia **1**: 73 (1900); Diels in Engl. u. Prantl: Nat. Pflanzenfam. **1**: 4. 231 (1899).

Antigramma sibirica J. Sm. Hist. Fil. 331 (1875).

Phyllitis sibirica O. Ktze, Rev. Gen. Pl. **2**: 818 (1891).

Asplenium rhizophyllum L. Sp. Pl. **2**: 1078 (1753), pro parte.

Camptosorus rhizophyllus var. *sibiricus* Christ ex Léveille, Bull. Acad. Géogr. Bot. (1910) 4.

Rhizome short, erect, densely radicose; *scales* at the apex dense, lanceolate, hair-pointed, fusco-brown, iridescent; *fronds* fasciculated, dimorphous, *sterile ones* ovate, rounded or acute, 1-4 cm long on stipes 1-5 cm long, herbaceous, green; *fertile ones* lanceolate, longer-stipitate, apex generally elongate and rooting, base not auricled but narrowed gradually or shortly cuneate; *venation* sub-biseriately reticulated along the prominent midrib, free towards margin, green and glabrous, except the underside being sparcely glandular; *sori* elongate, 1- or irregularly 2-seriate along midrib, *indusium* membranaceous, gray, some opening towards, and some against, the midrib, and still others, towards each other as in *Phyllitis*; *spores* bilateral, echinose.

Hopei (formerly Chihli): Peiping, *Bushell*, Oct. 1882; *Forbes* (1882); *Carles*, July 16, 1882; I-yuan-kou, *Clemens 37036* (1913); Pin-chow, Wang-mu Kou, *Chanet 451*; Peitaiho, *Cowdry 447*; Siawutai Shan, *C. L. Li*; ibid., *C. W. Wang 60589* (1933). Johoh: *David*. Shantung: Chefoo, *Faber* (1890); *Swinhœ* (1873); *Hancock 17* (1875); *Warburg*; Wei-hai-wei, *C. G. Matthew 410* (1904); Tai-shan, *C. Y. Chiao 21286* (1929); *Jacob 7*; *H. S. Hao 1810*, July 13, 1931; Tsingtau, *C. L. Tso* (1933). Mongolia: Peitche-ly, *E. Licent* (1927). Manchuria: *Maximowicz 410* (1860); *James*, May-August, 1886; *Ross*, Oct. 1887; *Webster*, May, 1885; *Komarov 36*; Kirin, in the vicinity of Chingpohu, *H. W. Kung 2104*, August 14, 1931; Fengtien, *H. W. Kung 876*, August 1, 1930.

Corea: *Taquet 2479*.

Port Arthur: *Miss Möller* (1926).

Also Japan, Siberia and Kamschatka.

The chief interest of this peculiar-looking little fern lies in its remarkable walking ability, that is, its frond generally prolongates into an elongate whip-like viviparous tip, by means of which it spreads itself all about. The second species of the genus is *C. rhizophyllus* (L.) Link, of North America, which differs from our fern in larger size, deeply auriculato-cordate base of frond and 2-3 rows of sori on each side of midrib.

Plate 107. Fig. 1. Habit sketch (natural size). 2. Portion of fertile frond, showing venation and position of sori (× 6). 3. Scale from rhizome (× 30). 4. Spores (× 100).

第一百零七圖

過山蕨(水龍骨科)

CAMPTOSORUS SIBIRICUS Ruprecht

地下莖短而直立，端具黝褐色之細長披針形鱗片，富於拆光性；葉簇生，二形，非子囊羣葉體爲卵形，鈍頭，長一至四粉，柄長一至五粉，紙質，綠色，全緣；葉脈網狀，網眼二列，斜出，不具小脈；子囊羣葉體爲披針形，具較長之柄，葉端通常呈線狀伸長而入土著根，基部不爲心臟耳形，但爲短楔形；葉脈亦爲網狀，兩面光滑；子囊羣形長，於中肋兩側成極不規則之一至二列，蓋膜質，有向上方開者，有向下方開者，更有彼此相向開者。

分布： 河北，山東，東三省，蒙古；日本，朝鮮，西伯利亞東部均產之。

本種爲亞洲東北部之特產，其異於美洲東北部特產之 Campt. rhizophyllus (Linn.) 者，爲其葉形較小，基部不爲心臟耳形是也；本種特其細長著根之葉端，能由一地繁衍至他地，故特名之曰過山蕨。

圖註： 1. 本種全形(自然大)， 2. 著生子囊羣葉體之一部，表明其葉脈及子囊羣之位置(放大六倍)， 3. 地下莖端之鱗片(放大三十倍)， 4. 胞子(放大百倍)。

CAMPTOSORUS SIBIRICUS Ruprecht

過　山　蕨

C. R. Feng Del. et Lith.

PLATE 108

ATHYRIUM SHEARERI (Baker) Ching

POLYPODIACEÆ

ATHYRIUM SHEARERI (Baker) Ching in C. Chr. Ind. Fil. Suppl. III. 44 (1934).

Nephrodium Sheareri Baker, Journ. Bot. (1875) 200.

Dryopteris Sheareri C. Chr. Ind. Fil. 292 (1905).

Nephrodium isolatum Baker, Gard. Chron. n. s. **14**: 494 (1880).

Aspidium polypodiforme Makino, Bot. Mag. Tokio **6**: 46 (1892, nom. nud.)

Nephrodium polypodiforme Makino, Bot. Mag. Tokio **13**: 58 (1899); Matsum. Ind. Pl. Jap. **1**: 323 (1904).

Dryopteris polypodiformis C. Chr. Ind. Fil. 285 (1905); Makino et Nemoto, Fl. Jap. 1621 (1925).

Athyrium polypodiforme Tagawa, Acta Phytotax. et Geobot. **1**: 158 (1932).

Aspidium otarioides Christ, Bull. Acad. Géogr. Bot. (1902) 247.

Dryopteris otarioides C. Chr. Ind. Fil. 282 (1905).

Dryopteris subsagenioides Christ, Bull. Acad. Géogr. Bot. (1910) 8; C. Chr. Ind. Fil. Suppl. I. 40 (1912); Nakai, Fl. Kor. **2**: 396.

Rhizome wiry, wide-creeping, black, apex and base of stipe sparcely clothed in brown, thin, lanceolate *scales*; *frond* far apart, stipe 10-20 cm long, straminous, naked, lamina oblong or deltoid-ovate, 15-20 cm long, 10-15 cm broad, pinnate under pinnatifid, deltoid-lanceolate, acuminate apex; *texture* thin, herbaceous, green, glabrous except rachis and costa which are sparcely setaceous underneath; *pinnæ* 4-8-jugate, subfalcate, acuminate, sharply serrate, the lower ones sessile, the upper ones adnate, truncate or cuneate at base, 6-10 cm long, 1.5-2 cm broad, lobato-incised; *lobes* oblong or rounded with aristate teeth; *veins* distinct, pinnate in lobes, 3-4-jugate, veinlets simple, curving up into the teeth; *sori* small, rounded, dorsal on the lower 2 pairs of veinlets, *indusium* reniform, setaceous, very fugaceous.

Kiangsi: Kiukiang, Lu-shan, *Dr. Shearer* (type) (1873); *Maires* (type of *Nephrodium isolatum*); *N. K. Up 1832*; Paradise Pools, *Charles E. DeVol 25*, July 27, 1933, edge of stream. Chekiang: Hangchow, Fan-chiao, *R. C. Ching 3715*. Hupeh: Shin Shan Hsien, *S. S. Chien 8111* in herb. Univ. Nanking, July 29, 1922. Kweichow: Tenyen, *Y. Tsiang 5802*; Tin-fan, *Cavalerie 2050*; Pin-fa, *Cavalerie 46, 1839*; Tsingay, *Bodinier 2050* (type of *Aspidium otarioides*). Szechwan: Nanchuan, *W. P. Fang 5794*.

Corea: Quelpært, *Taquet 2382* (type of *Dryopteris subsagenioides*).

Also Japan, common.

This peculiarly distinct fern, known under many a name as cited above, has been subjected to much nomenclatural changes. Its position in *Athyrium* can, however, hardly be doubted, if the generic status of *Anisocampium* Presl is not recognized. Our species is closely related to *Athyrium Cumingianum* (Presl) Ching (*Dryopteris otaria* O. Ktze.), differs chiefly in the shortly setose rachis, costa and costules underneath, aristate serrature and free venation.

Plate 108. Fig. 1. Habit sketch (natural size). 2. Portion of basal pinna, showing venation and position of sori (× 5). 3. Indusium (greatly enlarged). 4. Scale from rhizome (× 20).

第一百零八圖

廬山蹄蓋蕨(水龍骨科)

ATHYRIUM SHEARERI (Baker) Ching

地下莖橫行，黑色，先端及葉柄基部略具褐色之薄質披針形鱗片；葉散生，柄長十至二十粉，稻桿色，光滑，葉體椭圓形或卵三角形，長十五至二十粉，寬十至十五粉，一回羽狀分裂，頂部漸尖頭，深裂，紙質，綠色，光滑，惟中肋及主脈下面稍具短剛毛；小葉三至八對，鐮形，下部數對無柄，上部數對合生，漸尖頭，基部呈截形或短楔形，長六至十粉，寬一·五至二粉，葉緣具不規則之銳鋸齒；葉脈明顯，羽狀分叉，伸入鋸齒；子囊羣小，椭圓形，着生於部一對葉脈上，蓋腎形，具短剛毛，不久卽脫落。

分布： 江西，浙江，貴州，四川；日本及朝鮮亦產之；最初發現於廬山。

本種通常散生於森林中，罕見有羣生者，故採集時往往不能於一處得多數標本也。

圖註： 1. 本種全形(自然大)， 2. 基部小葉之一部，表示其葉脈及子囊羣之位置(放大五倍)，3. 子囊羣蓋(高倍放大)， 4. 地下莖上之鱗片(放大二十倍)。

Plate 108

第一百零八圖

ATHYRIUM SHEARERI (Baker) Ching

蘆山蹄蓋蕨

C. R. Feng Del. et Lith.

PLATE 109

ATHYRIUM OTOPHORUM (Miq.) Koidzumi

POLYPODIACEÆ

ATHYRIUM OTOPHORUM (Miq.) Koidzumi, Fl. Symb. Orient. Asiat. 40 (1930); C. Chr. Ind. Fil. Suppl. III. 43 (1934).

Asplenium otophorum Miq. Ann. Lugd. Bat. **3**: 175 (1867); Franch. et Sav. Enum. Pl. Jap **2**: 229 (1877).

Diplazium otophorum C. Chr. Ind. Fil. 236 (1905).

Athyrium violascens Diels in Engl. Jahrb. **29**: 196 (1900); C. Chr. Acta Hort. Gothob. **1**: 76 (1924).

Athyrium Wardii Christ (non Makino, 1857), Bull. Soc. Bot. France **52**: Mém. 1. 49 (1905).

Athyrium nigripes Christ (non Moore, 1857), Bull. Acad. Géogr. Bot. (1909) 174; C. Chr. Acta Hort. Gothob. **1**: 76 (1924).

Rhizome oblique, densely scaly; *scales* blackish or dark brown, linear-lanceolate, extending upwards some distance above the base of stipe; *fronds* cæspitose, stipe 25-30 cm long, 3 mm thick above the base, stramineo-rufescent, naked, lamina 30-35 cm long, 20-25 cm broad, bipinnate; *lateral pinnæ* 10-jugate below the caudato-acuminate pinnatifid apical part, very shortly petiolate with truncate base, elongate-lanceolate, long-acuminate, the basal ones only slightly shorter than those next above and decidedly narrowed towards the base, *i.e.* the basal pair of pinnules reduced, 10-12 cm long, 2.5-4 cm broad at the middle, rachilet straminous, glossy, shaded purplish, particularly towards the base, which is subglabrous with short, sparce glandular hairs and provided with appressed spines on the upper side; *pinnules* 14-17-jugate under the long-acuminate pinnatifid apex, 1.3-2.5 cm long, deltoid, acute or shortly acuminate, base strongly unequal, *i.e.* deltoidly auriculated above, obliquely cuneate below, with straight anterior side, sessile, rather regularly serrate with short, cuspidate teeth; *veins* distinct, forked, or pinnate in the auricle; *texture* rigidulously herbaceous, glabrous, except the rachis which is shortly glandular hairy above; *sori* elongate, oblique to costule, *indusium* membranaceous, brownish-gray.

Kweichow: Pin-fa, *Cavalerie 2600, 544*; Kwei-yang, *Bodinier 2008*; Ganchow, *Cavalerie 3769*; Sanhoa, *Y. Tsiang 6414, 6448*; Chengfeng, *Y. Tsiang 4568*; Tuyun, *Y. Tsiang 5810*. Hupeh: *Henry 5163*. Szechwan: Mt. Omei, *W. P. Fang 2762, 3119*; Nanchuan, *Rosthorn 1752* (type of *A. violascens*); *W. P. Fang 5709*; Kuan Hsien, *W. P. Fang 2161*; *Harry Smith 4888*; Tchen-kou-tin, *Farges 245*. Anhwei: Hwang Shan, *S. S. Chien 1235*. Kwangtung: North River, *C. L. Tso 20681*.

Japan: *C. G. Matthew 241* (1903), *forma typica*.

Type from Japan, now found to be a common fern throughout the Yangtze valley. Authors on Chinese ferns have generally considered this identical with *Athyrium nigripes* (Bl.) Moore of Malesia-Polynesia, with which our fern has, in fact, nothing to do at all. The present species constitutes the type for the group of about ten closely related members in West China and North-western India, and holds an intermediate position between *A. Mackinnoni* (Hope) and *A. mengtzeense* Hieron. of the same region. The Japanese *A. rigescens* Makino appears hardly distinct from our fern (Cf. Ogata, Ic. Fil. Jap. **5**: t. 216).

Plate 109. Fig. 1. Habit sketch (natural size). 2. Pinnule (× 7). 3. Scale from the base of stipe (× 20).

第 一 百 零 九 圖

光 蹄 蓋 蕨（水 龍 骨 科）

ATHYRIUM OTOPHORUM (Miq.) Koidzumi

地下莖斜生，具黝暗色或深棱色之披針形鱗片；葉簇生，柄長二十五至三十粉，寬十二至二十五粉，呈淡紫色，基部具鱗片，葉體長三十至三十五粉，二回羽狀分裂，頂部尾狀漸尖頭，深裂，一回小葉約十對，具極短之柄，漸尖頭，基部截形，披針形，長約十餘粉，寬約二·五至四粉，中肋基部下面呈淡紫色且略具腺毛，上面具肉刺；二回小葉爲三角形，長一·三至二·五粉，短尖頭，基部上方具耳形，下方斜形，葉緣具短鋸齒；葉脈明顯，三出或在上基部羽形分叉；厚紙質，兩面光滑；子囊羣長形，斜出，蓋膜質，棱灰色。

分布： 貴州，四川，湖北，廣東；日本亦產之。

本種爲一美麗之品，昔人誤認爲 Athyrium nigripes (Bl.)，實則此種不產於中國及日本，乃係馬來羣島種也。

圖註： 1. 本種全形(自然大)， 2. 二回小葉(放大七倍)， 3.葉柄基部鱗片（放大二十倍）。

ATHYRIUM OTOPHORUM (Miq.) Koidzumi

光 蹄 蓋 蕨

C. R. Feng Del. et Lith.

PLATE 110

ATHYRIUM GÖRINGIANUM (Kunze) Moore

POLYPODIACEÆ

ATHYRIUM GÖRINGIANUM (Kunze) Moore, Ind. Fil. 185 (1860); C. Chr. Ind. Fil. 143 (1905); Ogata, Ic. Fil. Jap. **2**: t. 58 (1929).

Aspidium Göringianum Kunze, Bot. Zeit. (1848) 557.

Lastrea Göringianum Moore, Ind. Fil. 93 (1858).

Dryopteris Göringiana Koidz. Bot. Mag. Tokio **43**: 382 (1929); Acta Phytotax. et Geobot. **1**: 233 f. 9-10 (1932).

Athyrium filix-foemina Christ (non Roth, 1799) in Warburg, Monsunia **1**: 75 (1900).

Athyrium iseanum Ros. in Fedde, Repert. Sp. Nov. **13**: 124 (1913); C. Chr. Ind. Fil. Suppl. II. 7 (1916).

Rhizome oblique; *scales* brown, thin, lanceolate; *fronds* cæspitose, stipe 16-30 cm long, pale straminous, glossy above the blackish scaly base, terete underneath, broadly flattened above, lamina oblong-ovate, 20-28 cm long, 12-16 cm broad, acuminate, tripinnatifid; *pinnæ* 10-14-jugate, alternate, petiolate, obliquely patent, the basal ones somewhat shorter than those next above, 7-10 cm long, 3-4 cm broad, base cordate, apex acuminate; *pinnules* 8-11-jugate, shortly petiolulate, alternate, 1.5-2 cm long, oblong, acute or bluntish, base subunequal, pinnatifid nearly down to costule into 4-6 oblong serrato-incised blunt segments, with one simple veinlet to each tooth; texture soft herbaceous, light green, rachis and rachilets are provided with characteristic spines on the upper side; *sori* elongate or horse-shoe-shaped, *indusium* thin, grayish-brown, large; *spores* reniform, smooth.

Chekiang: Ningpo, Tien-tai Shan, *Hancock 12* (1877); *C. Y. Chiao 14437*; *K. K. Tsoong 3713*. Szechwan: Mt. Omei, *W. P. Fang 2672, 3800* in herb. West China Acad. Sci. Yunnan: *H. T. Tsai 52696*. Fukien: Lin Fa Shan, *S. T. Dunn 3844*, June 6, 1904. Kiangsi: Kiukiang, Lu-shan, Incense Mill, *DeVol*, Aug. 5, 1933; Kiangsu: Wusih, Wei-shan, *R. C. Ching 3427*. Kwangtung: Lohfau Shan, *C. O. Levine & McClure 6833, 6929*; *Levine 1518*; *Merrill 10344* (1916); *Gerlach* (without locality).

Japan: *Göring 115* (type) (1844); Ise, *Sakura 47* (type of *A. iseanum*).

A native of Japan and Eastern China and was generally considered in the past as identical with *A. nigripes* (Bl.), from which it differs in ampler frond as long as the stipe, incised or, at least, dentate-incised ultimate pinnules and not strictly costular sori. A still closer ally is *A. strigillosum* Moore from North-western India and West China, which differs only in less divided frond and subcostular sori with uniform asplenioid indusium.

Plate 110. Fig. 1. Habit sketch (natural size). 2. Pinnule, showing venation and types of indusia (× 8). 3. Scale from the base of stipe (× 16).

第一百一十圖

柯氏蹄蓋蕨(水龍骨科)

ATHYRIUM GORINGIANUM (Kze.) Moore

地下莖斜出，鱗片爲櫻黃色，披針形；葉簇生，柄長十六至三十粉，淡稻桿色，光亮，葉體橢圓卵形，長二十至三十粉，寬十二至十六粉，漸尖頭，三回羽狀深裂；一回小葉十至十四對，互生，具柄，斜出，基部一對稍短，長七至十粉，寬三至四粉，基部心臟形，漸尖頭，二回小葉八至十一對，具短柄，長一·五至二粉，橢圓形，短尖頭或略爲鈍頭，基部亞等邊，羽狀深裂達中肋，裂片四至六數，鈍頭，具鋸齒，每一葉脈伸入一鋸齒；薄質，淡綠色，一二各回中肋上面具肉刺；子囊羣長形或馬蹄形，蓋膜質，形大。

分布：　浙江，江蘇，雲南，四川，廣東，福建；日本亦產之。

本種爲本屬複羽狀分裂之一種，爲我國東南各省常見之品，昔人誤認爲 Athyrium nigripes (Bl.)，實則大謬不然也。

圖註：　1. 本種全形(自然大)，　2. 二回小葉，表示其葉脈及子囊羣(放大八倍)，　3. 葉柄基部鱗片(放大十六倍)。

Plate 110

第一百一十圖

ATHYRIUM GORINGIANUM (Kze.) Moore

柯 氏 蹄 蓋 蕨

C. R. Feng Del. et Lith.

PLATE 111

ASPLENIUM SARELII Hooker

POLYPODIACEÆ

ASPLENIUM SARELII Hooker in Blakiston, Five Months on the Yangtze 363 (1862); C. Chr. Ind. Fil. 130 (1905).

Asplenium Saulii Baker in Hk. Syn. Fil. ed. 2. 216 (1874); Christ, Farnkr. d. Erde 203 (1897); Diels in Engl. u. Prantl: Nat. Pflanzenfam. **1**: 4. 240 (1899); Ogata, Ic. Fil. Jap. **1**: t. 8 (1928).

Asplenium Blakistoni Baker in Hk. Syn. Fil. 216 (1867); Hk. Ic. Pl. t. 1015, 1016 (1867).
Asplenium pekinense Makino (non Hance, 1867), Bot. Mag. Tokio **9**: 245 (1895).

Rhizome short, erect, densely scaly at the apex; *scales* lanceolate-subulate, black; *fronds* caespitose, stipe 5-10 cm long, slender, naked or sparcely scaly, green, lamina deltoidly ovate-oblong, 5-13 cm long, 2.5-5 cm broad or broader at base, acuminate, tripinnate, the basal *pinnae* much the largest, ovate, with unequal base, 1.5-3 cm long, 1-2 cm broad, ultimate pinnules linear, 2-3-fid, with a fine tooth, with 1-2 elongate *sori*, *induium* thin, gray, entire; *texture* herbaceous, glabrous on both sides, color green even upon drying.

Szechwan: *Blakiston* (type), without exact locality; Mt. Omei, *E. Faber 1007*; ibid., *E. H. Wilson 5358, 5262* (ad f. typica). Hupeh: Patung, *A Henry 3789*; I-chang, Nanto, *Henry 219*; Ou-pan Shan, *Silvestri 3249, 3248* (1905); Nang Hsien, *Silvestri 4029, 4030, 4032, 4033*. Kiangsu: Nanking, She Er Tung, *R. C. Ching 3499* (1927); *DeVol 63*, August 13, 1933; *L. F. Zee 11* in herb. Univ. Nanking; I-shing, *Y. L. Keng 2690*. Kiangsi: Fengcheng, *Y. Tsiang 10285*. Kweichow: Sanhoa, *Y. Tsiang 6243*; Pachai, *Y. Tsiang 6158*; Tsunyi, *Y. Tsiang 5298*.

Also Japan.

This distinct fern, common throughout the Yangtze valley, is closely related to *A. varium* Wall. from Northern India and West China, which differs in much narrower and bipinnate frond of a different outline with broadly oblong ultimate pinnules without so sharp teeth as in our fern. In the general shape of front, it appears very much like a small form of *A. tenuifolium* Don, differs in much thicker texture of front and entirely different shape of ultimate pinnules. *A. pekinense* Hance, common in North and Central China, seems to be specially distinct from our fern by its much reduced lower pinnæ.

Plate 111. Fig. 1. Habit sketch (natural size). 2. The same, forma typica. 3. Pinnule of first order (× 6). 4. Scales from rhizome (× 27).

第一百十一圖

華中鐵角蕨(水龍骨科)

ASPLENIUM SARELII Hooker

地下莖短而直立，端具黝褐色狹披針形之密鱗片；葉簇生，柄長五至十粉，光滑或略具鱗片，葉體爲三角卵橢圓形，長五至十三粉，寬二·五至五粉，或較寬，三回分裂，一回小葉約十對，基部一對最大，卵形，長一·五至三粉，寬一至二粉，基部不等，末回小葉爲披針形，二至三裂，端具尖鋸齒；子囊羣一至二個，細長，蓋膜質，全緣；葉爲紙質，兩面光滑，淡綠色。

分布： 四川，湖北，江蘇，江西，貴州；日本亦產之。

此爲揚子江流域習見之種，形體變異甚大，與此種最相似者爲 Asplenium pekinense Hance, 然本種基部一回小葉較位於上部者較大，故得區別。

圖註： 1. 本種全形(自然大)， 2. 同上，模式， 3. 一回小葉(放大六倍)， 4. 基部鱗片（放大二十七倍)。

ASPLENIUM SARELII Hooker

華 中 鐵 角 蕨

C. R. Feng Del. et Lith.

PLATE 112

ASPLENIUM SAMPSONI Hance

POLYPODIACEÆ

ASPLENIUM SAMPSONI Hance, Ann. Sci. Nat. V. **5**: 257 (1866); C. Chr. Ind. Fil. 130 (1905).

Asplenium Belangeri Dunn & Tutch. (non Kze. 1848) Fl. Kwangt. & Hongk. 344 (1912).

Rhizome thick, short, erect, densely scaly; *scales* blackish, lanceolate, dense at apex; *fronds* caespitose, stipe fleshy, 3-6 cm long, sparcely clothed in blackish, irregularly armed scales, lamina lanceolate, 13-25 cm long, 2-4 cm broad, acuminate, gradually narrowed towards base; *pinnæ* 17-28-jugate, patent, subsessile, the lower ones gradually reduced into a broadly deltoid outline below 1 cm long, the middle ones 1.5-2.5 cm long, 1 cm broad, oblong, obtuse, base unequal, being auricled at anterior side, deeply pinnatifid; *segments* 5-8-jugate, linear, pectinate, uni-nerved, the anterior basal one generally 2-3-forked; *texture* herbaceous, green; *sori* linear, one to each segment, *indusium* membranaceous, entire, open upward.

Kwangtung: Kai Kun Shek, *T. Sampson 11165* (type), in herb. Hance, June, 1867; *K. K. Wang 436* (1928). Kwangsi: Lungchow, *Morse 14*. Kweichow: *Esquirol 3731* (without exact locality).

This distinct endemic species is closely related to *A. Belangeri* (Bory) Kze. of tropical Asia, to which it was reduced by Baker (Cf. Syn. Fil. 223), from which it differs, however, in much smaller size with narrowly lanceolate frond, gradually narrowed towards the short fleshy scaly stipe, which is, as rachis, sparcely clothed in black, irregularly armed and distinctly reticulated scales. From *A. prolongatum* Hk., our fern differs in non-prolongated, and rooting apex of frond of a lanceolate outline, on much shorter stipe, and in very patent or subhorizontally spread, more copiously and regularly pinnatifid pinnæ, of which the lower ones are gradually shortened.

Plate 112. Fig. 1. Habit sketch (natural size). 2. The same, a larger form. 3. A middle pinna, showing venation and sorus (× 16). 4. Scale from rhizome (× 50). 5. The same from stipe (× 76). 6. Scales from rachis (× 60).

第一百十二圖

嶺南鐵角蕨(水龍骨科)

ASPLENIUM SAMPSONI Hance

地下莖肥短而直立，端具黑色披針形之鱗片；葉簇生，柄肉質，長三至六粉，略具黑色分义鱗片，葉體爲倒披針形，長十三至二十五粉，寬二至四粉，漸尖頭，向基部漸狹，二囘羽狀分裂，一囘小葉十七至二十八對，開張，幾無柄，位於下部者爲三角形，較上部者爲小，中部小葉長一·五至二·五粉，寬約一粉，矩圓形，鈍頭，基部不等，羽狀深裂，裂片五至八對，線形，具單脈，位於基部上方者通常二至三裂；紙質，綠色；子囊羣狹長，每裂片一數，蓋膜質，全緣，向上方開。

分布： 廣東，廣西，貴州。

此爲我國南部特有之種，其形體極類亞洲熱亞產之 Asplenium Belangeri (Bory)，而葉體較小，且呈倒披針形，向下部漸狹，故易區別。

圖註： 1.本種全形(自然大)， 2.同上，大形， 3.中部一回小葉，表示其葉脈及子囊羣(放大十六倍)， 4.地下莖上之鱗片放大五十倍)， 5.葉柄上之鱗片(放大七十六)， 6.中肋上之鱗片(放大六十倍。)

Plate 112

第一百十二圖

ASPLENIUM SAMPSONI Hance

嶺南鐵角蕨

C. R. Feng Del. et Lith.

PLATE 113

ASPLENIUM PROLONGATUM Hooker

POLYPODIACEÆ

ASPLENIUM PROLONGATUM Hooker, 2nd. Cent. Ferns t. 42 (1860); Sp. Fil. **3**: 209 (1860); Christ, Bull. Soc. Bot. France **52**: Mém. 1. 54 (1905); C. Chr. Ind. Fil. Suppl. III. 36 (1934); Blot, Bull. Soc. Hist. Nat. Toulouse (1932) 50.

Asplenium rutæfolium Hk. et Bak. Syn. Fil. 222 (1867); Christ, Farnkr. d. Erde 208 (1897); Diels in Engl. u. Prantl: Nat. Pflanzenfam. **1**: 4. 242 (1899), pro parte.

Asplenium rutæfolium Franch. et Sav. (non Kze. 1836) Enum. Pl. Jap. **2**: 222 (1876); Christ in Warburg, Monsunia **1**: 72 (1900); Makino, Phan. et Pterid. Jap. Ic. Illust. **1**: t. 55 (1899-1901).

Asplenium achilleifolium C. Chr. Ind. Fil. 99 (1905), pro parte

Asplenium bipinnatum var. *prolongatum* Bonap. Notes Pterid. Pt. **14**: 74 (1923).

Asplenium elongatum Christ, Bull. Acad. Géogr. Bot. (1910) 13.

Rhizome short, erect, scarcely scaly; *fronds* caespitose, stipe 8-15 cm long, glabrous, pale green, lamina 10-20 cm long or lnoger, to 3 cm broad, linear, suddenly terminated by a caudate, naked prolongation of rachis 2-5 cm long, and rooting at the apex, herbaceous, green, bipinnate, the lower pinnæ only slightly shortened; *pinnæ* subsessile, numerous, oblong with unequal base; *pinnules* narrow-linear, slightly curved, obtuse, uni-nerved, the anterior basal pinnule often bi- or tripartite; *sori* one to each pinnule, linear, *indusium* firm-membranaceous, pale green, opening upward.

Hongkong: *Forbes 574*; *Ford* (1872); *Matthew 67* (1904), *368*; *Gibbs 1* (1928). Kwangtung: Lohfau Shan, *C. O. Levine 515*; *N. K. Chun 41433*; Swatow, Thai-yong, *Dalziel*, July, 1901; Luntau Shan, Iu Village, *To & Tsang 12253*; Lokchong, *N. K. Chun 43684, 42484*; Sunyi, *S. P. Ko 51350*; *Y. K. Wang 31146*; Yingtak, *H. Y. Liang 61364*; Yao Shan, Lokchong, *S. P. Ko 51949*; *N. K. Chun 43015*; *Gerlach* (without exact locality). Kwangsi: Lin-yin Hsien, *R. C. Ching 7084*; San Fang, Lu-chen, *R. C. Ching 5751, 5817*. Fukien: Kuliang, Foo-chow, *H. H. Chung 4284, 4368*; *Hancock 6* (Kew No.). Chekiang: Pin-yang, *H. H. Hu* 162; Wen-chow, *R. C. Ching 1855*. Hupeh: Ichang, *A. Henry 3291*; *Wilson 2655*. Szechwan: Mt. Omei, *W. P. Fang 2553*; Tchen-kou-tin, *Farges 1262*. Kweichow: Tsin-gay, *Bodinier 2118*; Ganchow, *Michel 1026*; Pe-tsen, *Cavalerie 1568, 7002*; Cheng-feng, *Y. Tsiang 4394, 4610*, Tsunyi, *Y. Tsiang 5300*; Tuyun, *Y. Tsiang 5970*; Shih-tsien, *Y. Tsiang 4116*; Vanching Shan, *Y. Tsiang 7783B*. Yunnan: Mengtze, *Hancock 37*; *Henry 9228, 9228B, 9228A*; south of Red River, *Henry 13659*; Shweli-Salwin, *Forrest 24492*.

Tsus-Sima: *Wilford 838*.

Also Northern India, Tonkin, Japan and Corea.

Type from Khasya (leg. *Hooker f. & Thomson*), or Mishmee (leg. *Griffith*). Wilford No. 838 from Tsus-Sima was also cited by Hooker. A well-marked species endemic in the temperate part of the mainland of Asia. It was unfortunate that Hooker himself later combined it in Syn. Fil. with *A. rutæfolium*, a synonym to *A. achilleifolium* Lam. from Africa, from which our fern differs in the characters as first emphasized by himself in Species Filicum **3**: 209.

Plate 113. Fig. 1. Habit sketch (natural size). 2. Pinna (× 10). 3. Scale from rhizome (× 27).

第 一 百 十 三 圖

長 生 鐵 角 蕨（水 龍 骨 科）

ASPLENIUM PROLONGATUM Hooker

地上莖短而直立，端具黝褐黑色之狹披針形鱗片；葉簇生，柄長八至十五粉，淡綠，光滑，葉體長十至十五粉或較長，寬達三粉，線披針形，端呈尾狀，中肋延長至數粉而生根，薄肉質，綠色，二回分裂，小葉多至十數，無柄，位於下部者略短，橢圓形，基部不等，裂片狹線形，略向上灣曲，鈍頭，具一數葉脈，其位於基部上方者，通常二至三裂；子囊羣狹長，每裂片一個，蓋膜質，向上開。

分布： 香港，廣東，廣西，福建，浙江，湖北，貴州，四川，雲南；印度北部，交趾，安南，日本及朝鮮南部均產之。

本種爲亞洲大陸温熱帶產，常生於濕潤森林中之樹幹上或岩壁上，昔人誤認爲與菲洲產之 Asplenium achilleifolium Lam. 相同，實則二者大相逕庭。

圖註： 1.本種全形(自然大)， 2. 一回小葉(放大十倍)， 3. 地上莖上之鱗片(放大二十七倍)。

ASPLENIUM PROLONGATUM Hooker

長生鐵角蕨

C. R. Feng Del. et Lith.

PLATE 114

ASPLENIUM CRINICAULE Hance

POLYPODIACEÆ

ASPLENIUM CRINICAULE Hance, Ann. Sci. Nat. V. **5**: 254 (1866); Hk. et Bak. Syn. Fil. 208 (1867); Clarke, Tran. Linn. Soc. II. Bot. **1**: 479 (1880); Bedd. Handb. Ferns, Brit. Ind. 150 (1883); Christ, Bull. Herb. Boiss. **6**: 959 (1898); Diels in Engl. u. Prantl: Nat. Pflanzenfam. **1**: 4. 239 (1899); C. Chr. Ind. Fil. 106 (1905); Wu, Bull. Dept. Biol. Sun Yatsen Univ. No. **3**: 190 t. 87 (1932).

Asplenium Hancei Baker in Hk. Syn. Fil. ed. 1. 208 (1867); Kuhn, Bot. Zeit. (1869) 130.
Asplenium Beddomei Mett. ex Kuhn, Linnæa **36**: 93 (1869).
Asplenium falcatum Bedd. (non Lam., nec Thbg.) Ferns S. Ind. t. 141 (1864).
Asplenium polytrichum Christ, Bull. Acad. Géogr. Bot. (1909), Mém. XX. 172.
Asplenium adiantoides Wu, Bull. Dept. Biol. Sun Yatsen Univ. No. **3**: t. 88-90 (1932).

Rhizome short, erect, densely scaly; *fronds* cæspitose, stipe 7-10 cm long, dark-brown, densely scaly throughout the rachis; *scales* dark rufo-brown, iridescent, clathrate, subulate from broad and often branched base, caduous, lamina lanceolate, caudate-acuminate, 10-30 cm long, 4-7 cm broad, simple pinnate; *pinnæ* lanceolate, acuminate, 2-4 cm long, the lower ones gradually abbreviated, ovate-rhomboid with obtuse apex, base unequal, obliquely truncate above, cuneate below, margin irregularly erose-dentate; *texture* herbaceous, color opaque; *veins* flabellately forked, channelled; *sori* linear, oblique to costa, *indusium* firm, entire, lower ones often open towards each other.

Kwangtung: Ting-wu Shan, *Sampson 11203* (type) in herb. Hance, June 15, 1866; Whampoa, *Hance*; *Ford 228* in herb. Hongkong; Lokchong, *C. L. Tso 21332*; Swatow, Thai-yong, *Dalziel*, July, 1899. Hongkong: *Dr. Harland 91*; *Hance 7418* (1857); Tai-mo Shan, *Matthew*, Oct. 15, 1907. Fukien: Yengping, *H. H. Chung 2992*; Amoy, *De Grijs 1198* in herb. Hance; *T. S. Dunn 777*, May 15, 1905. Kwang-si: Yao Shan, *S. S. Sin 331* (1928); Seh-feng Dar Shan, *R. C. Ching 8436*; Lu-chen, *R. C. Ching 5551*. Yunnan: Mengtze, *Hancock 182*; Szemeo, *Henry 11939, 11939B, 11939C*. Kweichow: Pin-fa, *Cavalerie 2844* (type of *A. polytrichum*); Tsin-gay, *J. Laborde*, Jan. 14, 1898; Tu-shan, *Y. Tsïang 6954*.

Also Northern India and Neilgheries.

A very variable fern as to the size and shape of pinnæ, as has been well illustrated by Wu by half dozen plates under different names. In type, the pinnæ are 4-5 cm long. *A. Hancei* Baker from Kwangtung represents a small form, 15 cm long with lamina 2-3 cm broad, pinnæ ovate-oblong with crenate margin. Habit exactly similar to *A. planicaule* Wall., which differs in glabrous stipe and rachis. I have strongly suspected (Cf. Blot, Asplen, d. Tonkin p. 36) that the present species from mainland may after all prove to be a geographic form of *A. pellucidum* Lam. of Malesia-Polynesia and also frequent in Annam, which differs from our fern only in elongate lanceolate, acuminate pinnæ, of which the lower ones are even more strongly reduced into an ovate outline.

Plate 114. Fig. 1. Habit sketch (natural size). 2. Pinna, showing venation and position of sori (× 2). 3. Scale from rhizome (× 16). 4. Scales from stipe and rachis (×10). 5. A small form with short obtuse pinnæ (natural size).

第一百十四圖

毛鐵角蕨(水龍骨科)

ASPLENIUM CRINICAULE Hance

地下莖短而直立，端具黑色披針形密鱗；葉簇生，柄長七至十粉，具深褐色細長鱗片，富於拆光性，葉體闊披針形，長十至三十粉，寬四至七粉，一回羽狀分裂，小葉十至二十對，位於下部者漸短，中部者長二至四粉，卵斜方形，鈍頭或極尖頭，基部不等，葉緣具不整齊之鈍鋸齒，厚紙質，乾則呈黝褐色，中肋鱗片疏生，久則脫落，葉脈扇形分叉，上下面呈溝脊形；子囊狹長，斜出，蓋爲厚膜質，全緣，向上開，其位於下部者，常相對開。

分布： 廣東，香港，廣西，雲南，貴州；印度亦產之。

本種最初於廣東發現，現則南部各省均產之，極似馬萊羣島產之 Asplenium pellucidum Lam. 或卽爲該種地理分佈之一變形耳。

圖註： 1. 本種全形(自然大)， 2. 小葉，表明其葉脈及子囊羣之位置(放大二倍)， 3. 地下莖上之鱗片(放大十六倍)， 4. 葉柄上之鱗片(放大十倍)， 5. 本種小形全形(自然大)。

ASPLENIUM CRINICAULE Hance

毛 鐵 角 蕨

C. R. Feng Del. et Lith.

PLATE 115

ASPLENIUM SAXICOLA Rosenstock

POLYPODIACEÆ

ASPLENIUM SAXICOLA Rosenstock in Fedde, Repert. Sp. Nov. **13**: 122 (1913); C. Chr. Ind. Fil. Suppl. II. 7 (1916).

Asplenium comptum Hance, Ann. Sci. Nat. V. **5**: 255 (1866); Kuhn, Bot. Zeit. (1869) 131; C. Chr. Ind. Fil. 105 (1905); Blot. Bull. Soc. Hist. Nat. Toulouse (1932) 39 (non Kze. 1852).

Asplenium dimidiatum var. *comptum* Baker in Hk. Syn. Fil. ed. 2. 486 (1874).

Asplenium affine var. *sinense* Christ, Bull. Acad. Géogr. Bot. (1905) 243.

Asplenium dimidiatum Christ, (non Sw. 1788) Bull. Herb. Boiss. **7**: 9 (1899); Bull. Acad. Géogr. Bot. (1910) 13; Bonap. Notes, Pterid. Pt. **14**: 117 (1923).

Rhizome short, erect or oblique, densely scaly; *scales* dark rufo-brown, linear-lanceolate, subulate towards apex; *fronds* subcæspitose, stipe 10-20 cm long, dark straminous, sparcely scaly throughout rachis, lamina 12-28 cm long, 7-11 cm broad, simple pinnate with distinct end-pinna; *pinnæ* 5-12-jugate, long-petiolate, the lower ones much the largest, gradually diminished towards apex, rhomboid with attenuate base and gradually acuminate towards apex, the lower ones often 1-2-lobed, margin erose-dentate; *texture* coriaceous, glabrous on both sides; *venation* distinctly canaliculated on both sides; *sori* linear, oblique, *indusium* of the same shape, brown, thick, entire, the lower ones open towards each other.

Kwangtung: Kai Kun Sheh, West River, *Sampson 1190* in herb. Hance (type of *A. comptum*); North River, *C. Ford* (1879); *226* (1888); Lien-chow, *Matthew*, Nov. 30, 1907; Yun Fou Hsien, West River, *K. K. Wang 434*; *K. K. Tsoong 4298*. Kwangsi: Wang-chin, Lu-chen, *R. C. Ching 5473*; Lan-lon, *R. C. Ching 6398*; Lung-chow, *Morse 40*; Lin Shan Hsien, *Sin & Wang 51* (1927). Kweichow: Tcehn-feng Hsien, *Cavalerie 3852* (type); Tien-sen Kou, *Cavalerie 1853* (type of *A. affine* var. *sinense*); Tseh-heng, *Y. Tsiang 9247*; Kouy-houa, *Cavalerie 1215*; Kwei-yang, *Esquirol 901*; Gan-chow, *Michel 992, 1000*; Tchen-lin, *Michel 1051*. Yunnan: Mengtze, *Henry 11542*.

Tonkin: Dong Dang, *Balansa 99*; Lang-nac, *Colani 3346*, frequent.

This is another of the distinct but little known Chinese species by Hance, but, unfortunately, his name, *A. comptum*, has to become invalidated by Kunze. Our fern is closely related to *A. dimidiatum* Sw. of tropical America, to which it was referred as a variety by Baker, as identical by Christ and others, but differs in long-petiolate pinnæ with erose-dentate (not lacerate) margin. The type from Kweichow has lateral pinnæ tend to lobato-pinnate; the same form is also seen from Kwangtung.

Plate 115. Fig. 1. Habit sketch (natural size). 2. Pinna, showing venation and sori (× 2). 3. Scale from rhizome (× 10).

第 一 百 十 五 圖

粵鐵角蕨(水龍骨科)

ASPLENIUM SAXICOLA Rosenstock

地下莖短而直立或斜生，端具紅棲色狹披針形之鱗片；葉亞簇生，柄長十至二十糎，深稻稈色，鱗片疏生，達於中肋，葉體長十二至二十八糎，寬七至十一糎，一回羽狀分裂，小葉五至十二對，頂上小葉形同側葉，基部小葉較大，間具二三裂片，向上漸小，斜方形，漸尖頭，基部延長；革質，兩面光滑；葉脈扇形分叉，兩面呈溝脊形；子囊羣狹長，斜出，莖線形，淡褐色，質略厚，全緣，向上開，其位於下部者彼此相向開。

分布： 廣東，貴州，雲南；交趾亦產之。

本種爲本區內特產，最初於廣東發現， Hance 氏名之曰 Asplenium comptum ，惜此名早爲 Kunze 氏所用，不能存在耳； 此種極類美洲熱帶產之 Asplenium dimidiatum, 惟其小葉具較長之柄，葉緣深裂，故易分別。

圖註： 1. 本種全形(自然大)， 2. 小葉，表示其葉脈及子囊羣(放大二倍)， 3. 地下莖上之鱗片(放大十倍)。

ASPLENIUM SAXICOLA Rosenstock

粵 鐵 角 蕨

C. R. Feng Del. et Lith.

PLATE 116

WOODWARDIA ORIENTALIS Swartz

POLYPODIACEÆ

WOODWARDIA ORIENTALIS Swartz in Schrad. Journ. Bot. 1800². 76 (1801); Syn. Fil. 117, 315 (1806); Willd. Sp. Pl. **5**: 418 (1810); Kze, Pterid. Jap. in Bot. Zeit. (1868) 323; Hk. Sp. Fil. **3**: 68 (1860); Syn. Fil. 188 (1867); Ching, Bull. Fan Mem. Inst. Biol. **2**: 3 t. 1 (1931); C. Chr. Ind. Fil. Suppl. III. 196 (1934).

Blechnum radicans var. Houtt. Nat. Hist. **2**: t. 97 f. 1 (1783).
Woodwardia radicans var. *auriculata* Kuhn, Journ. Bot. (1868) 268.
Woodwardia radicans var. *orientalis* C. Chr. Ind. Fil. 658 (1905).
Woodwardia angustiloba Hance, Journ. Bot. (1868) 176.
Woodwardia japonica Hk. Journ. Bot. (1857) 341, pro parte.
Woodwardia radicans Christ (non Sm. 1793) in Warburg, Monsunia **1**: 66 (1900).
Woodwardia prolifera Hk. et Arn. in Bot. Beech. Voy. 275 t. 56 (1836-40); Nakai, Bot. Mag Tokio **39**: 105 (1925).
Woodwardia exaltata Nakai, Bot. Mag. Tokio **35**: 149 (1925).

Rhizome thick, woody, erect, densely clothed at apex in very large, bright brown, lanceolate acuminate, membranaceous *scales* 2-4 cm long; stipe cæspitose, thick, 30 cm long or longer, rufo-straminous, sparcely scaly throughout, *lamina* oblong-ovate, 30-50 cm long, 20 cm broad, bipinnatifid; *pinnæ* 6-8-jugate under the deeply pinnatifid acuminate end-pinna with shortly decurrent base, subopposite, 10-13 cm long, 4-5 cm broad, broadly lanceolate, acuminate, base subequal or often strongly unequal, *i.e.* the lower basal 1-2 segments suppressed, leaving a wingless costa, the anterior basal segment more or less decurrent; *segments* oblong-lanceolate, shortly acuminate, sharply serrated; *venation* obscure, areolæ imperfectly 2-rowed along costa; *texture* rigidly coriaceous; *sori* oblong-linear, immersed, uniseriate and close to costule, *indusium* brown, thick, vaulted.

Fukien: Foo-chow, *Gregory* (1857) in herb. Hance (type of *W. angustiloba*); *Warburg*; Santu Island, *Matthew*, Oct. 3, 1907; Diongloh Hsien, *H. H. Chung 1244*; Nan-ching, *Schindler 407*; Yengping, *H. H. Chung 2936*; Chuan-chow, *H. H. Chung 3082*; Inghok, *H. H. Chung 2639*. Hongkong: Victoria Peak, *Tutcher 670*. Che-kiang: Ningpo, *Hancock 5* (1877). Kwangtung: Swatow, Thai-yong, *Dalziel*, July, 1899; Nam-yung, *S. P. Ko 50759*; Lokchong, *N. K. Chun 42727, 42462*.

Also Japan, Formosa, Liu-kiu and the Philippines.

Type from Japan (leg. Thunberg) and was first identified by Houttuyn under *Blechnum radicans* var. In the herbarium Thunberg, there are to be found four sheets of *Woodwardia*, of which only one marked β is the true *W. japonica*, while the other three are representing the present species. The type in herb. Swartz matches Houttuyn's figure exactly. Our fern has generally been considered as identical with *W. radicans* (L.) Sm. of Europe and America, but the differences between the two closely related species have already been contrasted by me (Cf. Bull. Fan Mem. Inst. Biol. **2**: 6-7, pls. I-II).

Var. **prolifera** Ching, Bull. Fan Mem. Inst. Biol. **2**: 6 (1931); C. Chr. Ind. Fil. Suppl. III. 196 (1934).

Woodwardia prolifera Hk. et Arn. in Bot. Beech. Voy. 275 t. 56.
Woodwardia exaltata Nakia, Bot. Mag. Tokio **35**: 149 (1921).

Differs from the typical form only in the frond being copiously gemmiferous above.

Fukien: Foo-chow, *Fortune* (1853); *Carles* (1885); Min-chow, *H. H. Chung 1905, 2086*; Amoy, *H. H. Chung 105*. Kwangtung: Jao-ping, Lokchong, *N. K. Chun 42784*. Liu-kiu: *Beechey* (type); *C. Wright*. Formosa: Tamsui, *Oldham 20, 245*.

Plate 116. Fig. 1. Habit sketch (natural size). 2. Portion of segment, showing venation and sori (× 10). 3. Scale from base of stipe (× 16). 4. Pinna of var. *prolifera* (natural size). 5. Young plant developed from a gemma (× 16).

第一百十六圖

東方狗脊(水龍骨科)

WOODWARDIA ORIENTALIS Swartz

地下莖木質肥大，直立，大形黃櫚色之披針形鱗片密覆，長達三四粉；葉簇生，葉柄粗厚，長三十粉或過之，下部鱗片密生，上部疏生，葉體長糀圓形，長三十至五十粉，寬約二十粉，二回羽狀深裂，頂部漸尖，深裂，小葉六至八對，亞對生，具短柄，長十至十三粉，寬四至五粉，闊披針形，漸尖頭，基部極不等，羽狀深裂，裂片闊披針形，具銳強鋸齒；葉脈不明顯，網狀，網眼二列，不具小脈；葉硬革質，兩面光滑；子囊羣長腎形，貼近裂片中肋，凹入葉質內，蓋同形，厚膜質，隆起，宿存。

分布： 福建，廣東，香港；日本，台灣，琉球及菲列濱羣島均產之。

本種爲東方特產，昔人誤認爲與歐美產之 Woodwardia radicans Smith 相同，余曾於昔年訂正之，讀者可參閱靜生生物調查所彙報第二卷六至七頁，卽知兩種之異同矣。

圖註： 1. 本種全形(自然大)， 2. 裂片之一部，表示其葉脈及子囊羣(放大十倍)， 3. 葉柄基部鱗片(放大六十倍)， 4. 多子變種(自然大)， 5. 自芽胞發生之幼植物(放大十六倍)。

Plate 116
第一百十六圖

WOODWARDIA ORIENTALIS Swartz

東方狗脊

C. R. Feng Del. et Lith.

PLATE 117

DICTYOCLINE GRIFFITHII Moore

POLYPODIACEÆ

DICTYOCLINE GRIFFITHII Moore, Gard. Chron. (1855) 854; Ind. Fil. LIX (1857); J. Sm. Hist. Fil. 149 (1875); Bedd. Ferns Brit. Ind. t. 155 (1866); Cop. Univ. Calif. Publ. Bot. **16**: 61 (1929); C. Chr. Ind. Fil. Suppl. III.71 (1934).

Hemionitis Griffithii Hk. f. et Thoms.; Hk. Sp. Fil. **5**: 193 (1864); Syn. Fil. 399 (1867); Bedd. Handb. Ferns, Brit Ind. etc. 415 (1883); Christ, Farnkr. d. Erde 62 (1897); Bull. Acad. Géogr. Bot. (1909) 177; Bull. Herb. Boiss. (1896) 674; in Warburg, Monsunia **1**: 58 (1900).

Dictyogramma Griffithii Trev. Atti Ist. Veneto. V. **3**: 591 (1877).

Gymnogramme Griffithii Hance, Journ. Bot. (1886) 14.

Aspidium Griffithii Diels (non Bedd. 1876) in Engl. u. Prantl: Nat. Pflanzenfam. **1**: 4. 186 (1899); C. Chr. Ind. Fil. 76 (1905); Ogata, Ic. Fil. Jap. **1**: t. 6 (1928); Wu, Bull. Dept. Biol. Sun Yatsen Univ. No. **3**: 64 t. 23 (1932).

Hemionitis Wilfordii Hk. Fil. Exot. t. 93 (1859).

Dictyocline Wilfordii J. Sm. Hist. Fil. 149 (1875).

Hemionitis Griffithii var. *Wilfordii* Hk. Syn. Fil. 399 (1867); Makino, Bot. Mag. Tokio **10**: 286.

Hemionitis Griffithii var. *pinnata,* Makino, Bot. Mag. Tokio **10**: 286.

Dictyocline Griffithii var. *tenuisissima* Ching, Bull. Fan Mem. Inst. Biol. **1**: 146 f. 1 (1930).

Rhizome short, oblique, densely scaly and setose hairy; *scales* lanceolate, rufo-brown, rigid, opaque, provided with gray, needle-like setose hairs on the margin; *fronds* cæspitose, stipe 12-30 cm long, angular, straminous, sparcely scaly at base, setose hairy throughout the rachis, lamina deltoid to oblong-ovate, 15-30 cm long, 12-18 cm broad, deeply pinnatifid to pinnate under the deltoid acuminate pinnatifid apex, base cordate; *pinnæ* free, 1-6-jugate, sessile lanceolate, 8-10 cm long, 2.5-4 cm broad, entire or slightly wavy, acuminate, base rounded, densely setose hairy underneath, sparcely and shortly so above; *texture* harsh-herbaceous, opaque upon drying; *lateral main veins* distinct to the edge, intervening veinlets anastomosing in 3 rows of hexagonal or quadri-angular and exappendiculate areolæ; *sori* indefinite, reticulated, following the course of veinlets; *sporangia* globular, shortly stalked, provided with a few setose hairs near the top.

Kwangtung: Tai-mo Shan (opposite Hongkong), *Matthew,* Nov. 7, 1907; Lungtau Shan, Iu Village, *C. C. C. 12098, 12225*; Swatow, *Dalziel,* July, 1901; Sam Koh Shan, Tsungfa-lungmon Hsiens, *W T. Tsang 20484,* May 16, 1932; Yamfa Hsien, *S. P. Ko 50689*; Lohfau Shan, *C. L. Tso 20923*; Lokchong, *C. L. Tso 20923*; *N. K. Chun 42161*; Intak, *H. Y. Liang 61240*; *Gerlach.* Fukien: Yengping, *H. H. Chung 2948,* August 9, 1924; Yung-chang, *Rankin, Dunn 3759* in herb. Hongkong. Kwangsi: Yao Mar Shan, Lin-yin Hsien, *R. C. Ching 7186* (1928); Yao Shan, *S. S. Sin 111,* May 25, 1928. Yunnan: Mengtze, *Henry 10422*; *Hancock 214*; *H. T. Tsai 52534* (without exact locality). Kweichow: Pin-fa, *Cavalerie 2855*; Pana, Cheng-feng, *Y. Tsiang 4283, 4415.* Chekiang: Pin-yang, Yang-tang Shan, *K. K. Tsoong 3750,* Oct. 19, 1920 (type of var. *tenuisissima*).

Formosa: Keelung, *Wilford 503* (type of *Hemionitis Wilfordii*).

Khasya: *Griffith* (type).

Upper Burma: Htawgaw, *Forrest 25414.*

Also Japan and Liu-kiu.

A peculiarly distinct genus of one single species with pinnatifid or pinnate fronds. *Hemionitis Wilfordii* represents a pinnatifid form of the fully pinnate Himalayan type; both forms are often seen from the same locality. The affinity of the genus to *Bolbitis* Schott and *Stegnogramma* Bl. seems to be most probable.

Plate 117. Fig. 1. Habit sketch (natural size). 2. The same, f. *Wilfordii* (Hk.). 3. Portion of pinna, showing venation and sori (× 3). 4. Scale from the base of stipe (× 20). 5. Sporangium (× 140). 6. Spores (× 140). 7. Hairs from stipe (× 140). 8. Hairs from rachis (× 140).

第 一 百 十 七 圖

聖蕨(水龍骨科)

DICTYOCLINE GRIFFITHII Moore

地下莖短，斜生，具鱗片與長剛毛；鱗片披針形，紅褐色，質硬，不透明，邊緣具長剛毛；葉簇生，柄長十二至三十粉，稻桿色，基部具鱗片，遍體披長剛毛，葉體三角形或椭圓卵形，長十五至三十粉，寬十二至十八粉，羽狀深裂或分裂，頂部漸尖頭，深裂，基部心臟形；小葉一至六對或較多，無柄，闊披針形，長八至十粉，寬二·五至四粉，全緣或稍呈波形，漸尖頭，基部圓形，下面密被長剛毛，上本短剛毛疏生，粗紙質，乾則呈黝褐色；側脈明顯，小脈網狀，網眼三列，六角形或四角形；子囊沿網脈散生，不具蓋，圓球形，近頂部具二三剛毛。

分布：廣東，廣西，福建，貴州，浙江；台灣，日本，琉球，緬甸及印度北部均產之。

本屬僅有一種，廣佈於亞洲大陸温暖帶各地，昔人以之歸入乂蕨屬 (Tectaria)，實則其地位近於 Bolbitis 與 Stegnogramma 兩屬也。

圖註： 1. 本種全形(自然大)， 2. 同上，葉體深裂， 3. 小葉一部，表明其葉脈及子囊分佈狀況(放大三倍)， 4. 葉柄下部鱗片(放大二十倍)， 5. 子囊(放大一百四十倍)， 6. 胞子 (放大一百四十倍)， 7. 葉柄上之剛毛(放大一百四十倍)， 8. 中肋上之剛毛(放大一百四十倍)。

DICTYOCLINE GRIFFITHII Moore

聖　　蕨

C. R. Feng Del. et Lith.

PLATE 118

QUERCIFILIX ZEYLANICA (Houtt.) Copeland

POLYPODIACEÆ

QUERCIFILIX ZEYLANICA (Houtt.) Copeland, Phil. Journ. Sci. **37**: 408 (1928); Univ. Calif. Publ. Bot. **16: 67** (1929); C. Chr. Ind. Fil. Suppl. III. 169 (1934).

Ophioglossum zeylanicum Houtt. Nat. Hist. **14**: 43 (1783); Pfl. Syst. **13**: 47 t. 94 f. 1 (1786).

Leptochilus zeylanicus C. Chr. Ind. Fil. 388 (1905); Merr. Enum. Pl. Hainan in Lingnan Sci. Journ. **5**: 11 (1927); Ogata, Ic. Fil. Jap, **1**: t. 32 (1928).

Acrostichum quercifolium Retz. Obs. Bot. **6**: 39 (1791); Hk. Sp. Fil. **5**: 279 (1864); Ic. Pl. t. 905; Fil. Exot. t. 80 (1858); Syn. Fil. 418 (1867); Dunn & Tutch. Fl. Kwangt. & Hongk. 255 (1912).

Gymnopteris quercifolia Bernh. in Schard. Journ. Bot. **1806**[1]. 20 (1807); Presl, Tent. Pterid. 244 (1836); Bedd. Ferns S. Ind. t. 47 (1863); Handb. Ferns, Brit. Ind. etc. 403 (1883); J. Sm. Hist. Fil. 138 (1875); Christ, Farnkr.d. Erde 49 (1897); Diels in Engl. u. Prantl: Nat. Pflanzenfam. **1**: 4. 200 (1899).

Leptochilus quercifolius Fée, Acrost. 88 (1845).

Dendroglossum quercifolium Fée, Gen. Fil. 80 t. 7B. f. 1 (1850-52).

Rhizome creeping, slender, densely clothed in lanceolate, rufo-brown, rather thick *scales*; *frond* uniseriate, 1 cm apart, strongly dimorphous, *sterile ones* on stipe 3-5 cm long, angular, ferruginous-hairy, hairs soft, multi-cellular, spread, lamina ligulate with hastate base, 6-9 cm long, 2-3 cm broad, apex rounded, base cordate, generally with one free, deltoid blunt pinna on each side, the central part much the largest, inciso-crenate, lateral main veins distinct, intervening veinlets irregularly anastomosing with included forked veinlets, costa and veins underneath copiously provided with rufo-brown, spread long hairs, margin ciliate, subglabrous above; *fertile frond* on stipe 10-18 cm long, slender, subnaked, lamina trifoliolate, strongly contracted into linear segments, the lateral segment generally with one additional lobe below, the central segment much the longest, pinnatifid into a few shallow, roundish, remote lateral lobes; *texture* thin herbaceous; *veins* also reticulated but much simpler than in the sterile fronds; *sori* linear, continuous, uniseriate between costa and margin, confluent at last.

Hongkong: *Matthew*, Nov. 1907. Kwangtung: Lohfau Shan, *Pakwan 92* in herb. Hance (1871). Kwangsi: Lungchow, *Morse 5*; Dar Wan, Tan-lan, *R. C. Ching 6553* (1928). Yunnan: Szemeo, *Henry 13388*. Hainan: Nodoa, *F. A. McClure 7860*.

Also Formosa, Tonkin, Southern India, Ceylon and Malesia-Polynesia.

The genus *Quercifilix*, of comparatively a recent date, contains only one terrestial little fern, fairly common in South China, on shaded moist banks of river. Its affinity to *Tectaria* is obvious according to Copeland.

Plate 118. Fig. 1-3. Habit sketch (natural size). 4. Portion of sterile lamina, showing venation (× 5). 5. Fertile frond, showing sori at young state (× 3). 6. Scale from rhizome (× 24). 7. Cross section of rhizome (× 15). 8. Cross section of the basal part of stipe (× 14). 9. Spores (× 200). 10. Hairs from stipe (× 80).

第 一 百 十 八 圖

地 耳 蕨（水 龍 骨 科）

QUERCIFILIX ZEYLANICA (Houtt.) Copeland

地下莖細長，橫行，密覆紅褐色之披針形鱗片；葉散生，二形，非子囊羣葉具長三至五粉之柄，遍體披軟毛，葉體舌形，長六至九粉，寬二至三粉，基部戟狀心臟形，具一對卵形裂片，葉緣呈深波狀，具捷毛；側脈明顯，小脈網狀，網眼具分叉小脈，下面被軟毛，上面短毛疏生；子囊羣葉具長十至十八之細長柄，葉體三裂，葉片狹長，深波形或具二三小裂片，脈亦爲網狀；子囊羣線形，一列，位於中肋與葉緣之間，不具蓋，囊向四面擴散。

分布： 香港，廣東，廣西，瓊洲島；台灣，交趾，印度南部及馬萊羣島等地均產之。

本屬僅此一種，昔人以之隸於 Leptochilus 屬，最近 Copeland 氏另闢一新屬，殊不爲過當，其與叉蕨屬之關係最密。

圖註： 1-3.本種全形（自然大）， 4. 非子囊羣葉之一部，表明其葉脈（放大五倍）， 5. 子囊羣葉之一部，表明其子囊幼時着生情形（放大三倍）， 6. 地下莖上之鱗片（放大二十四倍）， 7.地下莖之橫切面（放大十五倍）， 8. 葉柄基部橫切面（放大二十四倍）， 9. 胞子（放大二百倍）， 10. 葉柄上之毛（放大八十倍）。

QUERCIFILIX ZEYLANICA (Houtt.) Copeland

地　耳　蕨

C. R. Feng Del. et Lith.

PLATE 119

BOLBITIS HETEROCLITA (Presl) Ching

POLYPODIACEÆ

BOLBITIS HETEROCLITA (Presl) Ching in C. Chr. Ind. Fil. Suppl. III. 48 (1934).

Acrostichum heteroclitum Presl, Rel. Hænk. **1**: 15 t. 2. f. 2 (1825).
Pœcilopteris heteroclita Presl, Tent. Pterid. 242 (1836).
Heteroneuron heteroclitum Fée, Acrost. 92 (1845).
Chrysodium heteroclitum Kuhn, Ann. Lugd. Bat. **4**: 294 (1869).
Leptochilus heteroclitus C. Chr. Ind. Fil. 385 (1905).
Campium heteroclitum Cop. Phil. Journ. Sci. **37**: 396 (1928).
Acrostichum flagelliferum Wall. ex Hk. et Grev. Ic. Fil. t. 23 (1827); Hk. Sp. Fil. **5**: 258 (1864); Hk. et Bak. Syn. Fil. 418 (1867); Clarke, Trans. Linn. Soc. II. Bot. **1**: 579 (1880).
Bolbitis flagellifera Schott, Gen. Fil. ad t. 14 (1834).
Gymnopteris flagellifera Bedd. Ferns Brit. Ind. Suppl. 27 (1876); Christ, Farnkr. d. Erde 49 (1897); Diels in Engl. u. Prantl: Nat. Pflanzenfam. **1**: 4. 201 (1899).
Pœcilopteris flagellifera Bedd. Ferns Brit. Ind. t. 112 (1865); Handb. Ferns, Brit. Ind. etc. 433 (1883); J. Sm. Hist. Fil. 137 (1875).

Rhizome thick, creeping, densely scaly; *scales* fusco-brown, ovate-lanceolate, peltately attached, subentire; *frond* 1 cm apart, dimorphous, stipe straminous, bisulcate above, sparcely scaly, 15 cm long or longer, *sterile lamina* varies from simple lanceolate to pinnate with 1-5 pairs of pinnæ under the much elongated lanceolate, free end-pinna, terminated in a prolongated rooting tip; *lateral pinnæ* 10-15 cm long, 3-4 cm broad, subsessile, broadly lanceolate, acuminate, base rotundo-cuneate, margin undulate with a few remote, setiform teeth; *texture* thin herbaceous, blackish upon drying, glabrous on both sides; *lateral main veins* distinct, intervening veinlets angularly anastomosing in quadri-angular or hexagonal exappendiculate areolæ, 3-rowed between main veins, veinlets free towards margin; *fertile frond* conform, on much longer stipe; *pinnæ* greatly contracted; *sori* following the course of veinlets, confluent all over the under surface at last.

Yunnan: Mengtze, *Henry 10825*; Red River, *Hancock 176*; Szemeo, *Henry 12907*. Kwangtung: North River, *Ford*, Sept. 1879. Szechwan: Mt. Omei, *E. Faber 1042*. Hainan: Hoichow, *Hancock 10*. Kweichow: Houang-tsao-pa, *Cavalerie 7018, 7059*; Lo-fau, *Cavalerie 7645*. Kwangsi: Tsin Lung Shan, Lin-yin Hsien, *R. C. Ching 6869* (1928).

Tonkin: Mt. Bana, *Balansa 1887* (1886).

Also India generally, Malesia-Polynesia and the Philippines.

A very distinct but extremely variable fern with frond varying from simple to fully pinnate with terminal pinna always prolongated and rooting at apex. Leaves invariably turn blackish, when dried.

A form with leaf margin deeply crenate, var. **crenata** Ching, var. nov., is noted from Moulmein (leg. Parish, herb. Kew), Tenasserim (leg Geo. Gallatly 64, herb. Kew) and Christmas Island (leg. C. W. Andrews 126, herb. Mus. Brit.).

Plate 119. Fig. 1. Habit sketch (natural size). 2. Portion of sterile pinna, showing venation (× 4). 3. Portion of fertile pinna (× 4). 4. Scale from rhizome (× 20). 5. Spores (× 300).

第一百十九圖

長葉實蕨(水龍骨科)

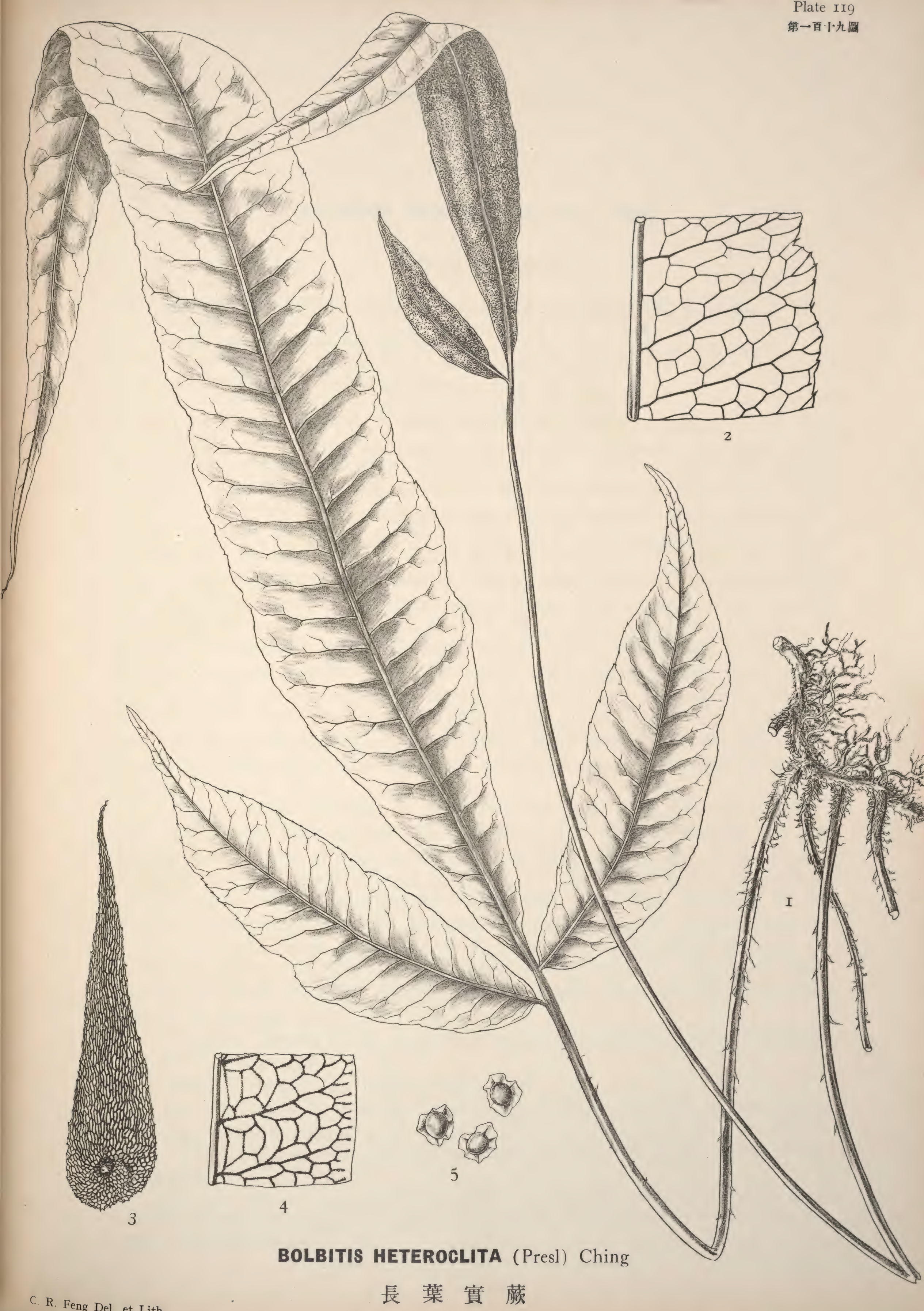
BOLBITIS HFTEROCLITA (Presl) Ching

地下莖肥厚，橫行，具深棲色卵披針形之鱗片；葉亞散生，二形，非子囊羣葉三裂或羽狀分裂，或爲披針形之單葉，小葉一至五對，頂端小葉與側方小葉同形而較長，其頂常伸長成鞭形，入土著根，全緣或稍呈淺波狀，側脈明顯，小脈網狀，網眼三列，惟向葉緣則分散，薄紙質，乾則呈淺黑色；子囊羣葉與非子囊羣葉同形而較小，柄較長，小葉較狹，子囊羣初隨網脈分佈，繼向四面擴散，不具蓋。

分布： 雲南，廣西，廣東，香港，貴州，四川，瓊洲島及亞洲熱帶各地。

本種爲本屬特殊之一種，惟葉形變異甚大，由單葉至羽狀分裂，乾則常呈黑色。

圖註： 1. 本種全形(自然大)， 2. 非子囊羣葉之一部，表示其葉脈(放大四倍)， 3. 子囊羣葉之一部(放大四倍)， 4. 地下莖上之鱗片(放大二十倍)， 5. 胞子(放大三百倍)。



BOLBITIS HETEROCLITA (Presl) Ching

長葉實蕨

C. R. Feng Del. et Lith.

PLATE 120

BOLBITIS SUBCORDATA (Cop.) Ching

POLYPODIACEÆ

BOLBITIS SUBCORDATA (Cop.) Ching in C. Chr. Ind. Fil. Suppl. III. 50 (1934).

Campium subcordatum Cop. Phil. Journ. Sci. **37**: 369 f. 23, t. 16 (1928).
Leptochilus subcordatum Wu, Bull. Dept. Biol. Sun Yatsen Univ. No. **3**: 92 t. 37 (1932).
Acrostichum repandum Benth. (non Bl. 1828) Fl. Hongk. 443 (1961).
Heteroneuron proliferum Hk. Florul. Hongk. in Journ. Bot. (1857) 339.
Leptochilus cuspidatus var. *crenata* Ros. Hedwigia **56**: 348 (1915).
Leptochilus sp. Merr. Enum. Pl. Hainan in Lingnan Sci. Journ. **5**: 10 (1927).

Rhizome thick, creeping, densely scaly; *scales* fusco-brown, ovate-lanceolate, acuminate, peltately attached, clathrate, nearly entire; *frond* dimorphous, cæspitose, stipe 30-60 cm long, terete underneath, bisulcate above, sparcely scaly, *sterile lamina* 20-50 cm long, 15-28 cm broad, oblong, impari-pinnate; *pinnæ* 4-10-jugate under the free trifurcate terminal one, which often prolongated and rooting at apex, 9-20 cm long, 2.5-5 cm broad, broadly lanceolate, opposite, the upper ones smaller and alternate, acuminate, base roundish or rotundo-truncate, shortly petiolate, margin crenate throughout, the rounded lobes bluntly serrate with a prominent seta at the sinus, rachis roundish underneath, broadly bisulcate above, glabrous on both sides; *lateral main veins* distinct, patent, 7 mm apart, intervening veinlets angularly anastomosing in 3 rows of areolæ between main veins and 2 rows from costa outwards, areolæ shortly appendiculate or not, veinlets free towards margin; *fertile frond* similar to the sterile one but much contracted, 7-10 cm broad; *pinnæ* 6-8 cm long, about 1 cm broad; *sori* indefinite, following the course of veinlets, confluent all over the under surface at last; *spores* bilateral, ovoid, broadly winged all around.

Hainan: Five Finger Mt., *F. A. McClure 8725, 9346, 9370, 9436* (type), Spring-May, 1922, shaded moist ravines; Tun Foo, *Eryl Smith 1641*, stream side, Jan. 14, 1923; Ling-shui Hsien, *H. Fung 20146*, May 3-20, 1932. Hongkong: *Hance 23*; *Dr. Naumann 763* (1869); *Schottmuller*; *Lamont 989*; *Dr. Harland*; *Bowring 22*; *Matthew 577*; *Robinson 8* (1925); *Katsumatta 6692*, June, 1909. Chekiang: Pin-yang, *H. H. Hu 156*. Kwangtung: Swatow, Thai-yong, *Dalziel*, April, 1901; Lohfau Shan, *N. K. Chun 40626*; Yao Shan, Ku Koong, *Y. K. Wang 31559*; Shek Mang Tai Shan, *C. L. Tso 23591*, August 7, 1933; Hu Lang Hong, *W. Y. Chun 7117*, August 23, 1931. Fukien: Foo-chow, Ku-shan, *Metcalf 7380*, Dec. 5, 1927; *Alexander*. Kwangsi: Yao Shan, *S. S. Sin 714*.

Formosa: *Faurie 281* (*L. cuspidatus* var. *crenata*); Tamsui, *Hancock 15*; Keelung, *C. W. Wilford 478*.

Tonkin: *Pételot*, Jan. 1922, a sterile frond.

Our fern, which is found to be abundant in shaded ravines in the Island Hongkong, is closely related to *B. Quoyana* (Gaud.) Ching from Malaya, differs chiefly in its not coadunate but free apical pinna and rotundo-cuneate base of the lateral pinnæ.

Plate 120. Fig. 1-2. Habit sketch (natural size). 3. Sterile frond of a larger form (natural size). 4. Portion of sterile pinna, showing venation (× 5). 5. Portion of fertile pinna (× 5). 6. Spores (× 200). 7. Scale from rhizome (× 16).

第一百二十圖

海南實蕨(水龍骨科)

BOLBITIS SUBCORDATA (Cop.) Ching

地下莖肥厚，橫行，具深櫚色之卵披針形鱗片；葉簇生，二形，柄長三十至六十粉，略具鱗片，非子囊羣葉長二十至五十粉，寬十五至二十八粉，楕圓形，一回羽狀分裂，小葉四至十對，披針形，長九至二十粉，寬二·五至五粉，頂端小葉較大，且常伸長其端，入土著根，基部爲圓截形，具短柄，漸尖頭，葉緣呈深波形，具鈍鋸齒，而於缺口處具一強大之短肉刺，厚紙質，淡綠色，兩面頗光滑；側脈明顯，小脈網狀，網眼三列，內具小短脈一或否，向葉緣分開；子囊羣葉與非子囊羣葉同形，惟葉柄長，小葉較狹，長六至八粉，寬約一粉，子囊羣初隨網脈分佈，繼則滿佈全面；胞子卵圓形，具闊翅。

分布： 瓊州島，廣東，廣西，香港，福建；台灣及交趾亦產之。

本種在香港及瓊洲島極爲普通，生於林中深溪邊，其葉端常延長回向土中著根。

圖註： 1-2. 本種全形(自然大)， 3. 大形之非子囊羣葉之一部(自然大)， 4. 同上，表明其葉脈(放大五倍)， 5. 子囊羣葉之一部(放大五倍)， 6. 胞子(放大二百倍) 7. 地下莖上之鱗片(放大十六倍)。

Plate 120

第一百二十圖

BOLBITIS SUBCORDATA (Cop.) Ching

海南實蕨

C. R. Feng Del. et Lith.

PLATE 121

HYPODEMATIUM CRENATUM (Forsk.) Kuhn

POLYPODIACEÆ

HYPODEMATIUM CRENATUM (Forsk.) Kuhn, v. Deck. Reis. Bot. **3**[3]: 37 (1879).

Polypodium crenatum Forsk. Fl. Aeg.-Arab. 185 (1775).

Aspidium crenatum Kuhn, Fl. Afr. 129 (1868); Christ, Farnkr. d. Erde 262 (1897); Bull. Herb. Boiss. 6: 195 (1898); in Warburg, Monsunia **1**: 81 (1900); Bull, Soc. Bot. France **52**: Mém. 1. 35 (1905).

Nephrodium crenatum Baker, Fl. Maur. 497 (1877); Clarke, Trans. Linn. Soc. II. Bot. **1**: 524 (1880); Diels in Engl. u. Prantl: Nat. Pflanzenfam. **1**: 4. 175 (1899); Dunn & Tutch. Fl. Kwangt. & Hongk. 348 (1912); Hand-Mzt. Symb. Sin. **6**: 25 (1929).

Lastrea crenata Bedd. Ferns Brit. Ind. Suppl. 18 (1876); Handb. Ferns, Brit. Ind. etc. 258 (1883).

Dryopteris crenata O. Ktze, Rev. Gen. Pl. **2**: 811 (1891); C. Chr. Ind. Fil. 258 (1905); Christ. Bot. Gaz. **51**: 348 (1911); Sim, Ferns of S. Afr. 111 t. 22 (1915); Ogata, Ic. Fil. Jap. **3**: t. 113 (1930); C. Chr. Acta Hort. Gothob. **1**: 63 (1924); Pterid. of Madag. 56 (1933).

Hypodematium onustum Kze, Flora **1833**[2]: 690.

Aspidium eriocarpum Wall, List n. 342 (1828, nomen nudum); Mett. Farngatt. Pheg. u. Aspid. 60 (1857).

Nephrodium eriocarpum Dcne. Arch. Mus. **2**: 185 (1841); Hk. Sp. Fil. **4**: 141 (1862).

Lastrea eriocarpa Presl, Tent. Pterid. 77 (1836); Bedd. Ferns S. Ind. t. 95 (1862).

Nephrodium odoratum Baker in Hk. Syn. Fil. 280 (1867).

Dryopteris Fauriei Kodama in Matsum. Ic. Pl. Koish. **2**: 11 t. 90 (1914). For further synonymy see C. Chr. Ind. Fil. p. 258.

Rhizome 4-6 mm thick, wide-creeping, densely clothed in bright brown linear-lanceolate *scales* to 3 cm long; *frond* approximate, stipe 10-25 cm long, straminous, densely clothed at the swollen base in a cushion of golden brown scales similar to those on rhizome, glabrous upwards, deeply grooved and hirsute above, lamina deltoid-pentagonous, 10-25 cm long and broad, 4-pinnatifid; *pinnæ* 5-10-jugate, the basal ones much the largest, petiolate; *pinnules* of 2nd. order oblong, bluntish, base rotundo-cuneate, equal, decurrent above the middle, deeply pinnatifid into oblong, rounded lobato-serrate *segments* with roundish apex; *texture* herbaceous, both sides densely setose hairy; *veins* distinct, free, pinnate in segment; *sori* large, rounded, dorsal on veinlets, *indusium* large, rotundo-reniform, attached by a deep sinus, densely setose hairy.

Widely distributed in Malesia-Polynesia, Japan, the Philippines, French In-do-China, India, Arabia, Abyssinia to South and East Africa, Cap Verde Islands and Maritius. In China, numerous specimens have been seen from Yunnan, Sze-chwan, Kweichow, Hupeh, Kwangtung, Kwangsi, Fukien, Kiangsu, Chekiang and Anhwei.

Type from Arabia and now found non-existant in the herb. Forskal in the Botanical Museum, Copenhagen. Though variable in size, degree of pinnation and density of pubescense, etc., the different geographic forms agree well with each other in all essential characters.

Plate 121. Fig. 1. Habit sketch (natural size). 2. Ultimate pinnule, showing venation and sori (× 6). 3. Indusium (× 20). 4-5. Scales from the base of stipe (× 10). 6. Hairs from underside of lamina (× 30). 7. Spores (greatly enlarged).

第一百二十一圖

腫足蕨（水龍骨科）

HYPODEMATIUM CRENATUM (Forsk.) Kuhn

地下莖橫行於岩隙中，密覆鮮明紅褐色膜質披針形之鱗片，長逾二三粉；葉近生，柄長十至二十五粉，稻桿色，其基部爲瘤狀膨大，爲密鱗片所覆，不之見也，葉體五角形，十至二十五粉或過之，四位羽狀深裂，紙質，兩面被剛毛，一回小葉五至十對，具柄，基部一對最大，矩圓三角形，急尖頭，末回裂片矩圓形，鈍頭，具大鋸齒；葉脈明顯，開離，羽狀分叉；子囊羣圓形，着於葉脈上，蓋大，圓腎形，以下方缺口著生，具剛毛。

分布： 本種廣佈於亞洲溫熱帶各地，達於菲洲之東南部及南洋羣島；在我國之雲南，四川，貴州，湖北，廣東，廣西，福建，江蘇，浙江，安徽均產之。

本種之特徵爲其好生於乾燥之石岩隙中，其葉柄之瘤狀基部爲鮮紅褐色之大鱗片所覆被，昔人以之隸於 Dryopteris 屬，最近經余之研究，應另屬以待之也。

圖註： 1. 本種全形（自然大）， 2. 末回小葉，表示其葉脈及子囊羣（放大六倍）， 3. 子囊羣蓋（放大二十倍）， 4-5. 葉柄基部鱗片（放大十倍）， 6. 葉下面之剛毛（放大三十倍）， 7. 胞子（高倍放大）。

Plate 121

第一百二十一圖

HYPODEMATIUM CRENATUM(Forsk) Kuhn.

C. R. Feng Del. et Lith.

PLATE 122

HYPODEMATIUM FORDII (Baker) Ching

POLYPODIACEÆ

HYPODEMATIUM FORDII (Baker) Ching, comb. nov.

Nephrodium Fordii Baker, Journ. Bot (1889) 177; Dunn & Tutch. Fl. Kwangt. & Hongk. 348 (1912).

Dryopteris crenata C. Chr. Ind. Fil. 258 (1905), pro parte.

Dryopteris Fordii Ching, Sinensia **3**: 330 (1933).

Dryopteris crenata var. *Fordii* C. Chr. Ind. Fil. Suppl. III. 86 (1934).

Rhizome slender, creeping, densely scaly; *scales* linear-lanceolate, golden brown, to 2 cm long; *frond* approximate, stipe 20-30 cm long, straminous, glossy, flexuose, the swollen base densely scaly, lamina deltoid-pentagonous, 4-pinnatifid; *pinnæ* 6-9-jugate, petiolate, the basal ones much the largest, deltoid, short-acuminate; *pinnules* 6-jugate, petiolulate, deltoid-oblong, acute, base cordate; *pinnules* of 2nd. order oblong-ovate, the lower ones shortly petiolulate, the upper decurrent, deeply pinnatifid, with 3-6 pairs of oblong, rounded serrate or lobato-incised segments; *texture* thin herbaceous, both sides shortly glandular hairy; *veins* distinct, free, pinnate; *sori* rounded, dorsal on veinlets, *indusium* thin, membranaceous, gray, glandular hairy, rotundo-reniform, attached by a deep sinus, margin glandularly ciliate.

Kwangtung: North River, *C. Ford 104* (type), Dec. 1888; Shiuhing, Ting-wu Shan, *S. P. Ko 50597*, June 12, 1930.

This is a decidedly distinct fern, known so far only from Kwangtung, differing from the preceding species in its gracil habit, thinner leaves, slender stipe almost twice as long as lamina, very membranaceous grayish, smaller indusium with glandular margin, and in its decidedly different type of hairs, which are not needle-like, but only shortly glandular with rounded or clavate, lemon-yellow enlarged apices. Dunn an Tutcher (*loc. cit.*) have distinguished this fern from the preceding by its "acute ultimate segments", neglecting altogether the characters as noted above

Plate 122. Fig. 1. Habit sketch (natural size). 2. The swollen basal part of stipe (natural size). 3. Ultimate pinnule, showing venation and sori (× 7). 4. Iñdusium (× 30). 5. Scale from the swollen base of stipe (× 10). 6, 7, 8. Cross sections of rhizome (× 8). 9. Cross section of the swollen base of stipe (enlarged). 10. Cross section of the upper part of stipe (enlarged). 11. Glandular hairs from the underside of lamina (enlarged). 12. Spores (enlarged).

第一百二十二圖

福氏腫足蕨(水龍骨科)

HYPODEMATIUM FORDII (Baker) Ching

本種形體酷似前種而瘦小，葉質較薄，柄長約二倍葉體，遍體不被長剛毛，僅球桿形之腺毛疏生，子囊羣蓋爲膜質，形小，背及邊緣亦具同樣之腺毛，其末囘小葉具較尖之鋸齒。

分布： 廣東北部，他處則尚未之見也。

圖註： 1. 本種全形(自然大)， 2. 葉柄之瘤狀膨大基部(自然大)， 3. 末囘小葉，表示其葉脈及子囊羣(放大七倍)， 4. 子囊羣蓋(放大三十倍)， 5. 着生於葉柄瘤狀基部之鱗片(放大十倍)， 6. 7. 8. 地下莖之橫切面（放大八倍)， 9. 葉柄瘤狀基部之橫切面（放大十倍)， 10. 葉柄上部橫切面（放大)， 11. 葉下面之腺狀毛（高倍放大)， 12. 胞子（高倍放大)。

HYPODEMATIUM FORDII (Baker) Ching

福氏腫足蕨

C. R. Feng Del. et Lith.

PLATE 123

HYPODEMATIUM CYSTOPTEROIDES Ching

POLYPODIACEÆ

HYPODEMATIUM CYSTOPTEROIDES Ching, sp. nov.

Aspidium crenatum Christ, Nuov. Giorn. Bot. Soc. Ital. n.s. (1897) 94; Bull. Bot. Soc. Ital. (1901) 297.

Status et configuratione cum *H. Fordii* (Baker) e China australis valde congruens, differt; indusiis tenuisissimis non rotundo-reniformibus sed valde variantibus, aut lanceolato-triangularibus, aut ovatis, aut ovato-triangularibus, basi vix cordatis, pinnulis anguste lanceolatis vel oblongo-lanceolatis, elongatis, sese multo separatis, longe acuminatis, basi magis cuneatis.

Rhizome slender, wide-creeping, densely scaly; *scales* rufo-brown, to 7 mm long, ovate-lanceolate, acuminate, entire, densely clothing the swollen base of stipe; *frond* approximate, long-stipitate, stipe 10-22 cm long, gracil, flexuose, pale-colored, naked throught, lamina ovate-deltoid, 7-11 cm long and as broad, long-acuminate, tripinnate; *lateral pinnæ* about 8-jugate under the pinnatifid acuminate apex, the basal ones much the largest, deltoid, opposite, to 10 cm long, 6 cm broad, basicopically produced, long-petiolate, the upper pinnæ gradually abbreviated, oblong-lanceolate or lanceolate, all shortly petiolate with equal, subcuneate base, rather wide apart from each other, the second pair of pinnæ from the base to 6 cm long, 2 cm broad near the base, pinnate; *pinnules* 7-jugate, rather far apart, oblong-lanceolate, to 1.2 cm long with subequal, cuneate, decurrent base and bluntly dentate apex, pinnatifid to the costule into 6-7 pairs of oblong or sparcely dentate *segments*; *veins* forked, ending in blunt teeth; both sides sparcely glandular hairy; *texture* thin herbaceous, color green; *sori* 5-7 pairs to each segment, medium-sized, rounded, *indusium* whitish, membranaceous, cystopteroid, triangular-lanceolate or ovate-deltoid with broad and hardly cordate base, cucullately attached to the receptacle.

Shantung: Tsinan, *A. P. Jacob 21*; ibid. Chien Fo Shan, specimens ex herb. Dept. Biol. Cheeloo Univ. (without collector's name); Tai-shan, *A. P. Jacob 1*; Chefoo, *E. Faber 1054* (herb. Kew, sub *Dryopteris crenata*). Shensi: Mt. Uan-san-pin prope "Pagoda", *Giraldi*, July 16, 1894; See-kin-tzuen, *Giraldi*, Dec. 28, 1895; Thæ-pæ-shan, *Giraldi*, August, 1896.

Our fern is more closely related to *H. Fordii* (Baker) than to *H. crenata* (Forsk.) in gracil habit and type of hairs, but differs in its long-acuminate apices of frond and of lateral pinnæ, which are elongate oblong-lanceolate with cuneate base in the middle pinnæ, and in its cystopteroid indusium, a character which alone markes this species very unique in the genus.

Plate 123. Fig. 1. Habit sketch (natural size). 2. Ultimate pinnule, showing venation and sori (× 14). 3. Scale from the swollen base of stipe (× 10). 4. Indusium (× 20). 5. Spores (enlarged).

第一百二十三圖

山東腫足蕨(水龍骨科)

HYPODEMATIUM CYSTOPTEROIDES Ching

本種形體酷類前種，惟其小葉及子囊羣蓋之形體大異，其小葉爲狹披針形，或橢圓披針形，彼此不如前種之密接，頂爲長漸尖頭，基部呈強度之楔形，其子囊羣蓋不爲圓腎形，但爲三角狀之披針形，或爲卵形，或爲卵狀三角形，絕類 Cystopteris 屬也。

分布： 山東之濟南，烟台，泰山，青島一帶及陝西中部，他處尚未之見也；此種爲本屬分佈極北之一種，昔人誤認爲腫足蕨，實則大異；其模式標本藏於濟南齊魯大學生物系。

圖註： 1. 本種全形(自然大)， 2. 末回小葉，表示葉脈及子囊羣(放大十四倍)， 3. 着生於葉柄瘤狀基部之鱗片(放大十倍)， 4. 子囊羣蓋(放大二十倍)， 5. 胞子(高倍放大)。

HYPODEMATIUM CYSTOPTEROIDES Ching

山東腫足蕨

C. R. Feng Del. et Lith.

PLATE 124

TECTARIA SUBTRIPHYLLA (Hk. et Arn.) Copeland

POLYPODIACEÆ

TECTARIA SUBTRIPHYLLA (Hk. et Arn.) Copeland, Phil. Journ. Sci. Bot. **2**: 410 (1907); Ching, Sinensia **2**: 33 (1931); C. Chr. Ind. Fil. Suppl. III. 185 (1934).

Polypodium subtriphyllum Hk. et Arn. in Bot. Beech. Voy. 256 t. 50 (1836-40); Christ in Warburg, Monsunia **1**: 75 (1900).

Aspidium subtriphyllum Hk. Sp. Fil. **4**: 52 (1862); Bedd. Ferns Brit. Ind. Suppl. 14 (1876).

Nephrodium subtriphyllum Baker in Hk. Syn. Fil. 296 (1874).

Sagenia subtriphylla Bedd. Ferns S. Ind. t. 242 (1863).

Rhizome thick, creeping, clothed at the growing tip in blackish, rigid entire, lanceolate *scales*; *frond* approximate, stipe 20-30 cm long, dark straminous, scaly near the base, sparcely setose hairy throughout, lamina deltoid-pentagonous; *lateral pinnæ* 1-2-jugate under the distinct, petiolate, pinnatifid large terminal pinna with cuneate base, the basal ones much the largest, petiolate, trifoliolate or trilobed with central lobe much the largest to 16 cm long, 12 cm broad, more or less lobed under the acuminate entire apex, base subrounded or cordate, the second pinnæ (if there any) oblong-lanceolate, acuminate, lobato-sinuate, base oblique and slightly adnate; *texture* herbaceous, underside rather copiously setose hairy, upperside glabrous except costa and rachis clothed in short reddish hairs; *venation* distinct, anastomosing with or without included veinlets in areolæ; *sori* large, rounded, compital, scattered or uniseriate in the lobes, leaving a broad sterile space along costa, *indusium* rotundo-reniform, thick, fallen off at last.

Besides those cited in my previous paper, additional specimens have since been noted as follows:

Hainan: Hung Mo Mt., *W. T. Tsang 18082*; Tai Hang, Lin Hwa Shan, *W. T. Tsang 15850*; Top of Dome, Five Finger Mt., *W. Y. Chun 6367* in herb. Univ. Nanking. Kwangtung: Lokchong, *N. K. Chun 42789*; *C. L. Tso 21339*; Lohfau Shan, *N. K. Chun 41506*; *C. O. Levine 1405*; Honam Island, *C. O. Levine 1808*; Namhoi, *S. P. Ko 50051*; Ting-wu Shan, *H. T. Ho 60081*. Hongkong: *Y. Tsiang 701*. Fukien: Foo-chow, *Warburg*.

Formosa: *Drs. F. & C. Baker*, Dec. 20, 1914.

Tonkin: Lang-Son, *Balansa 49* (1885); *Colani 2745*; Thai-Nguyen, *Colani 3401*; Bac-Giang, *Colani 3406, 2747*.

This is a very common fern in South China and particularly, the Island Hongkong, and closely related to *T. variolosa* (Wall.) from which it differs by the characters as already noted in my previous paper.

Plate 124. Fig. 1. Habit sketch (natural size). 2. Portion of lamina, showing venation and position of sori (× 5). 3. Hairs from lamina (× 120). 4. Scale from the base of stipe (× 20). 5. Sorus with indusium (× 50).

第一百二十四圖

三叉蕨(水龍骨科)

TECTARIA SUBTRIPHYLLA (Hk. et Arn.) Copeland

地下莖肥厚，橫行，端具黝褐色之硬質披針形鱗針；葉近生，柄長二十至三十粉，深稻桿色，基部鱗片疏生，遍體具剛毛，葉體三角形或五角形，長寬各逾二十五粉，一回小葉一至二對，頂部小葉形亦相同，惟基部呈楔形，基部一對最大，具柄，三裂，中裂片最大，漸尖頭，幾爲全緣，上部小葉或有或無，橢圓披針形，漸尖頭，基部呈斜形，邊緣呈深波狀；紙質，乾則呈黝褐色，下面具剛毛，上面惟各回中肋及主脈被深樓色之毛；葉脈網狀，網眼或具小脈或否；子囊羣圓形，頗大，着生於數小脈之交錯點，一列，略近葉緣，蓋圓腎形，質厚。

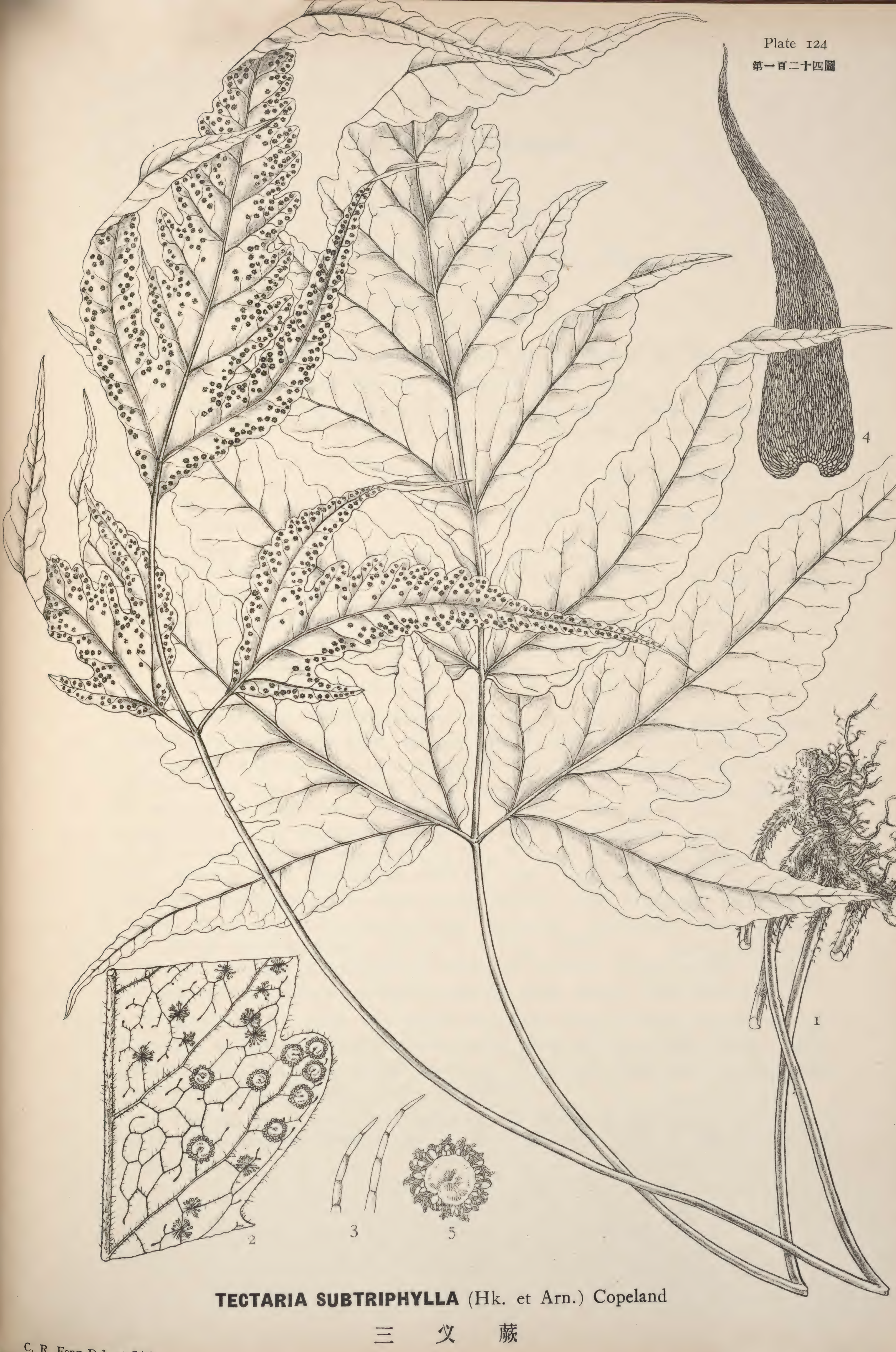
分布： 廣東，廣西，香港，瓊洲島，福建；台灣印度及交趾亦產之。

本種爲南方習見之品，而尤以香港爲最多。

圖註： 1. 本種全形(自然大)， 2. 葉體之一部，表示葉脈及子囊羣之位置(放大五倍)， 3. 葉下面之剛毛(放大一百二十倍)， 4. 葉柄基部之鱗片(放大二十倍)， 5. 子囊羣及蓋(放大五十倍)。

Plate 124

第一百二十四圖



TECTARIA SUBTRIPHYLLA (Hk. et Arn.) Copeland

三　叉　蕨

C. R. Feng Del. et Lith.

PLATE 125

TECTARIA MACRODONTA (Fée) C. Christensen

POLYPODIACEÆ

TECTARIA MACRODONTA (Fée) C. Christensen, Ind. Fil. Suppl. III. 181 (1934).

Sagenia macrodonta Fée, Gen. Fil. 313 (nomen) t. 24A f. 1 (1852).

Aspidium coadunatum Wall. (non Kaulf. 1824) Cat. 337 (1828, nom. nud.); Hk. et Grev. Ic. Pl. t. 202 (1831); Mett. Fil. Lips. 94 t. 22 f. 3-4 (1856); Christ, Bull. Acad. Géogr. Bot. (1910) 13.

Sagenia coadunata Bedd. Ferns S. Ind. t. 81 (1873); Christ, Bull. Soc. Bot. France **52**: Mém. 1. 34 (1905).

Tectaria coadunata C. Chr. Contr. U. S. Nat. Herb. **26**: 331 (1931); Ching, Sinensia **2**: 18 pls. 1-11 (1931).

Aspidium cicutarium var. *coadunatum* C. Chr. Ind. Fil. 65 (1905).

Nephrodium cicutarium Hk. Sp. Fil. **4**: 48 (1862); Baker in Hk. Syn. Fil. 299 (1867), pro parte.

Nephrodium cicutarium var. *coadunatum* Clarke, Trans. Linn. Soc. II. Bot. **1**: 540 (1880).

Aspidium cicutarium var. *tenerifrons* Christ, Bull. Acad. Géogr. Bot. (1902) 257.

Sagenia apiifolia Christ (non J. Sm. 1841), Bull. Acad. Géogr. Bot. (1906) 120.

Aspidium pin-faense Christ, Bull. Acad. Géogr. Bot. (1909) 169.

Aspidium kwanonense Hayata, Ic. Pl. Form. **8**: 137 f. 61 (1918).

Rhizome thick, creeping, densely scaly; *scales* rufo-brown, ovate-acuminate; *frond* approximate, stipe 25-35 cm long, glossy, dark castaneous, lamina deltoid, bipinnatifid under the coadunate pinnatifid terminal pinna; *lateral pinnæ* 2-4-jugate, the basal ones much the largest, shortly petiolate, cordate, deltoid-lanceolate, 10-20 cm long, to 12 cm broad, pinnatifid to a narrow wing along costa, the upper pinnæ more or less adnate, also deeply pinnatifid with entire, falcate segments, of which the lower ones broadly lanceolate, 5-7 cm long, about 2 cm broad, acuminate, lobato-incised; *lobes* falcate, rounded, entire; *texture* thin herbaceous, upperside densely pubescent with short, clear, reddish hairs, underside sparcely so, margin ciliate, rachis and costa shining castaneous underneath; *veins* anastomosing, areolæ elongate, mostly without including veinlets; *sori* rounded, far apart, regularly uniseriate on each side of costule of segment, mostly apical on the including veinlets, *indusium* rotundo-reniform, large, brown, fallen off at last.

As previously cited, the species is known from Yunnan, Szechwan and Kweichow in China, besides Northern India, Siam and Peninsular India. Additional material recently examined are *K. K. Tsoong 2530* from Tali, Yunnan, and *Esquirol 1031* from Houang-tsao-pa, Kweichow.

Plate 125. Fig. 1. Habit sketch (natural size). 2. Segment, showing venation and position of sori (× 10). 3. Sorus with indusium (× 20). 4. Hairs from lamina (× 80). 5. Scale from rhizome (× 24).

第一百二十五圖

高山三义蕨(水龍骨科)

TECTARIA MACRODONTA (Fée) C. Christensen

地下莖肥厚，橫行，具紅褐色之卵披針形鱗片；葉近生，柄長二十五至三十五粉，呈光亮深栗色，葉體三角形，二回羽狀深裂，頂部羽狀深裂；一回小葉二至四對，基部一對最大，具短柄，基部心臟形，三角披針形，長十至二十粉，寬達十二粉，羽狀深裂，上部小葉概爲合生，間爲羽狀深裂，裂片鐮形，全緣，位於基部者爲闊披針形，長達六七粉，寬約二粉，波狀深裂；薄紙質，上面被深褐色之短毛，下面有同樣之毛疏生，葉緣具捷毛，各位中肋呈光亮之深栗色；葉脈網狀，網眼具小脈或否；子囊羣圓形，一列，位於裂片之中肋兩側，着生於網眼內之小脈端，蓋圓橢形，褐色。

分布： 雲南，四川，貴州；印度北部，交趾暹邏，錫蘭均產之。

本種形態稍似前種，惟其葉柄及各位中肋呈光亮之深栗色，葉體二回分裂，葉質較薄，上面及葉緣具深褐色之毛，子囊羣着生於網眼內之小脈端，故易區別。

圖註： 1. 本種全形(自然大)， 2. 裂片，表示其葉脈及子囊羣之位置(放大十倍) 3. 子囊羣與蓋(放大二十倍)， 4. 葉上面之毛(放大八十倍)， 5. 地下莖上之鱗片(放大二十四倍)。

TECTARIA MACRODONTA (Fée) C. Christensen

高 山 三 义 蕨

C. R. Feng Del. et Lith.

PLATE 126

CYRTOMIUM FORTUNEI J. Smith

POLYPODIACEÆ

CYRTOMIUM FORTUNEI J. Smith, Ferns Brit. & Fore. 286 (1866); Hist. Fil. 205 (1875); L. H. Bailey, Manu. Cult. Pl. 71 (1924); C. Chr. Amer. Fern Journ. **20**: 49 (1930); Ind. Fil. Suppl. III. 66 (1934); Tagawa, Acta Phytotax et Geobot. **3**: 61 f. 5-9 (1934).

Polystichum Fortunei Nakai, Bot. Mag. Tokio **39**: 116 (1925).

Polystichum falcatum var. *Fortunei* Nichols; Matsum. Ind. Pl. Jap. **1**: 342 (1904); C. Chr. Ind. Fil. 581 (1905).

Cyrtomium falcatum (non Presl) C. Chr. Ind. Fil. Suppl. I. 101 (1912); L. H. Bailey, Gentes Herb. (1920) 9.

Aspidium falcatum Hk. (non Sw.) in Blakiston, Five Months on the Yangtze 364 (1862); Baker in Hk. Syn. Fil. 257 (1867); Franch. et Sav. Enum. Pl. Jap. **2**: 234 (1879), pro parte.

Polystichum falcatum var. *polypterum* Diels in Engl. Jahrb. **29**: 195 (1900), pro parte.

Cyrtomium falcatum var. *polypterum* Christ, Bull. Soc. Bot. France **52**; Mém. 1. 33 (1905); Bull. Acad. Géogr. Bot. (1906) 250.

Aspidium falcatum var. *caryotideum* Christ, Nuov. Giorn. Bot. Soc. Ital. n.s. (1897) 93.

Cyrtomium lonchitoides Christ, Bull. Soc. Bot. France **52**: Mém. 1. 33 (1905), pro parte.

Polystichum lonchitoides Nakai (non Diels, 1900), Bot. Mag. Tokio **23**: 77 (1914).

Cyrtomium vittatum Christ ex Léveille, Bull. Acad. Géogr. Bot. (1910, non 1905).

Rhizome short, oblique or erect, densely scaly; *scales* large, 1 cm or longer, rufo-brown or atro-castaneous, glossy, ovate, acuminate; *fronds* cæspitose, stipe 15-30 cm long, strong, densely clothed in the similar scales, which are mixed with others of linear outline, lamina oblong, 15-45 cm long, 10-17 cm broad, pinnate under the free hastate end-pinna; *pinnæ* 10-20-jugate, alternate, lower ones hardly shortened, in typical form, up to 10 cm long, 2 cm broad, falcate, long-acuminate, shortly petiolate, base broadened, rounded or auricled above, margin finely serrate throughout; *texture* chartaceous, light green, not glossy in living state, rachis fibrillose-scaly throughout; *veins* distinct, copiously reticulated, areolæ hexagonal, oblique, each with 1-2 excurrent included soriferous veinlets; *sori* rounded, scattered over the underside, terminal or infra-apical on the veinlets, *indusium* large, coriaceous, grayish, rounded, peltately attached, depressed at centre, with wavy margin.

This is one of the most common ferns throughout the Yangtze valley and extends as far north as the southern part of Shensi and southwardly to the north of Canton (Lokchong, *W. T. Tsang 20706*). Also Japan and southern Corea; recently known from Tonkin.

A very distinct but very variable fern, generally regarded hitherto as a variety of *C. falcatum*, from which it can be easily told apart by its much thinner leaves of a light green color, not glossy, in living state, its generally more numerous, lanceolate-falcate or sometimes oblong-ovate (as in var. *polypterum*) pinnæ always with minutely and regularly serrate margin from the base upwards. Generally grown as pot plant.

Plate 126. Fig. 1. Habit sketch (natural size). 2. Forma *latipinna* (natural size). 3. Forma *polypterum* (Diels).

第一百二十六圖

貫衆(水龍骨科)

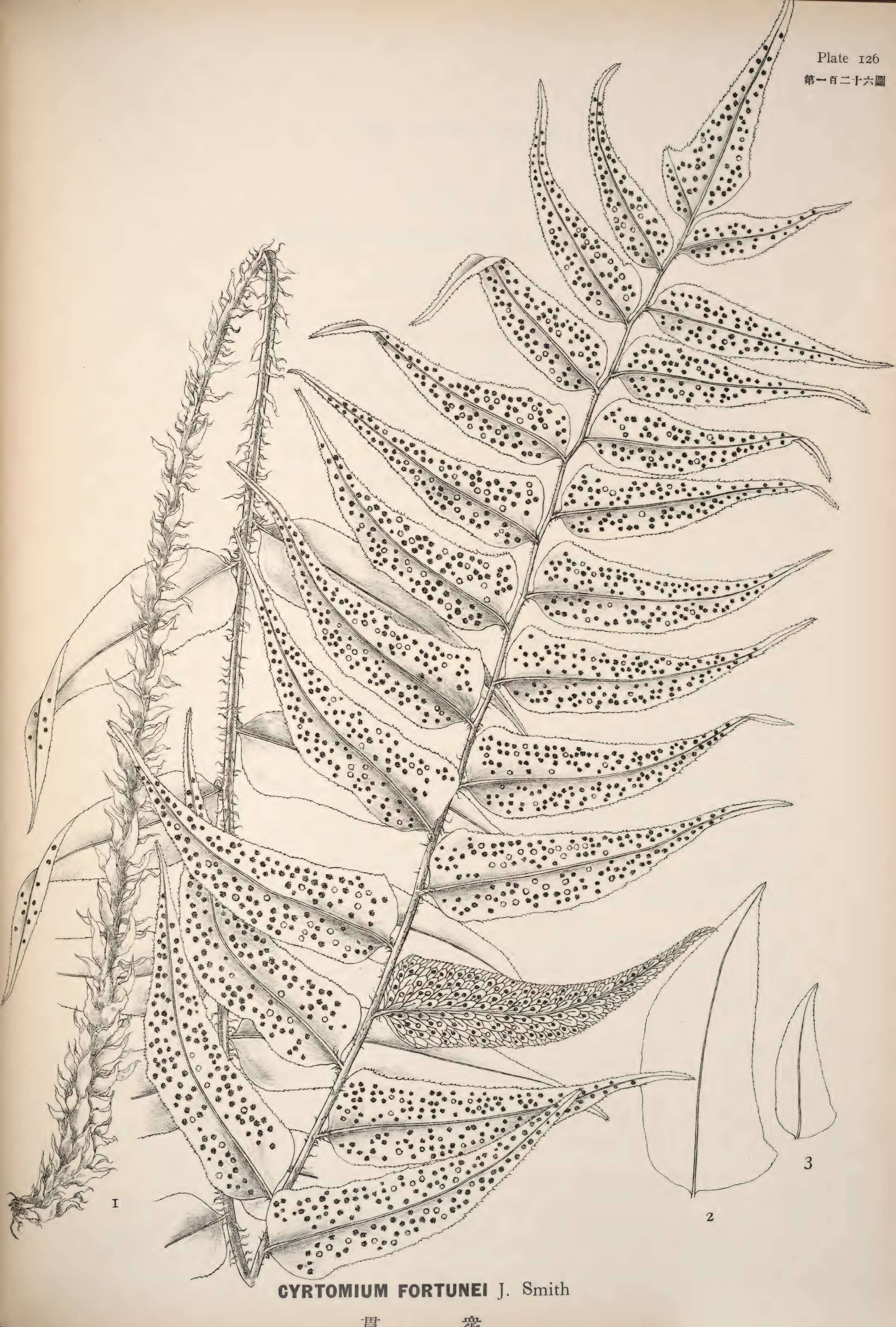
CYRTOMIUM FORTUNEI J. Smith

地下莖肥短，斜出或直立，具光亮紅褐色之卵形密鱗片，長逾一粉；葉簇生，柄長十五至三十粉，具密鱗片，並有披針形之狹鱗片混生，葉體橢圓形，長十五至四十五粉，寬十至十七粉，一回奇數羽狀分裂，小葉十至二十對，互生，具短柄，位於基部者與其上部者等長或略短，長可達十粉，寬二粉，鐮形，長漸尖頭，基部較寬，圓形或上方呈耳形，葉緣具細密鋸齒，達於極頂，厚紙質，淡綠色，上面無光澤，中肋及葉柄具纖維狀之鱗片；葉脈網狀，網眼斜出，內具一至二數通直斜出之小脈；子囊羣圓形，不規則排列，着生於網眼內之小脈上，蓋圓形，質厚，灰色，楯狀着生。

分布： 揚子江流域各省均產之，北達陝西之南部，南及廣東北部之樂昌縣；日本及朝鮮南部亦甚普通，最近在交趾發現；歐美各國咸盆栽以供玩賞。

本種爲我温暖各省習見之品，且常羣生一處，其形態變異甚大，小者高不及尺，小葉呈卵形，長僅二三粉耳。

圖註： 1. 本種全形(自然大)， 2. 闊葉變種(自然大)， 3. 小葉變種(自然大)。



CYRTOMIUM FORTUNEI J. Smith

貫　　衆

PLATE 127

CYRTOMIUM FALCATUM (L. fil.) Presl

POLYPODIACEÆ

CYRTOMIUM FALCATUM (L. fil.) Presl, Tent. Pterid. 86 (1836); Link, Sp. Fil. Hort. Berol. 164 (1841); Fée, Gen. Fil. 286 (1850-52); Moore, Ind. Fil. 277 (1861); Hk. Florul. Hongk. in Journ. Bot. (1857) 340; J. Sm. Ferns Brit. & Fore. 142 (1866); Hist. Fil. 204 (1875); C. Chr. Ind. Fil. Suppl. I. 101 (1912); Amer. Fern Journ. **20**: 48 (1930); Christ in Warburg, Monsunia **1**: 76 (1900); Bull. Acad. Géogr. Bot. (1910) 5; Tagawa, Acta Phytotax. et Geobot. **3**: 59 (1934).

Polypodium falcatum L. fil. Sp. Pl. Suppl. 446 (1781); Thunb. Fl. Jap. 336 (1784); Poir. Encyc. Bot. **5**: 527 (1804).

Aspidium falcatum Sw. in Schrad. Journ. Bot. (**1800**[2]): 31 (1801); Syn. Fil. 43 (1806); Hk. et Arn. in Bot. Beech. Voy. 274 (1836); Hk. Lond. Journ. Bot. **1**: 494 (1842); Fil. Exot. t. 92 (1857); Sp. Fil. **4**: 40 (1862); Syn. Fil. 257 (1867); Benth. Fl. Hongk. 454 (1861); Lowe, Ferns **6**: t. 9 (1857); Franch. et Sav. Enum. Pl. Jap. **2**: 336 (1879); Christ, Frankr. d. Erde 232 (1897).

Dryopteris falcata O. Ktze, Rev. Gen Pl. **2**: 812 (1891).

Polystichum falcatum Diels in Engl. u. Prantl: Nat. Pflanzenfam. **1**: 4. 194 (1899); C. Chr. Ind. Fil. 581 (1905); Matsum. et Hayata, Enum. Pl. Form. 583 (1906); Yabe, Bot. Mag. Tokio **17**: 65 (1903); Nakai, Journ. Sci. Coll. Univ. Tokio **31**: 399 (1911); Brause ex Loess. Prod. Fl. Tsingtau. in Bot. Centralbl. **37**: 80 (1920).

Aspidium falcatum var. *genuinum* Makino, Bot. Mag. Tokio **10**: 212 (1896).

Polystichum falcatum var. *genuinum* Matsum. Ind. Pl. Jap. **1**: 342 (1904).

Polypodium japonicum Houtt. Nat. Hist. **14**: 167 t. 98 f. 3 (1783); Pfl. Syst. **13**: 187 t. 98 f. 3 (1786).

Rhizome short, erect, densely clothed in large, broadly ovate, suddenly acuminate, atro-brown, membranaceous *scales* with fimbriate margin; *fronds* cæspitose, stipe 20-30 cm long, straminous, angular, densely scaly on the lower part, scales similar to those on rhizome and mixed with smaller, linear-lanceolate ones, lamina oblong-lanceolate, 15-40 cm long, 6-13 cm broad, impari-pinnate; *pinnæ* 1-10-jugate, alternate, the lower ones much the largest, 5-8 cm long, 3-4 cm broad, broadly ovate-falcate, long-attenuated towards apex, base petiolate and rounded, the upper ones gradually diminished, the uppermost ones lanceolate-falcate, 5 cm long, 1.5 cm broad, subsessile, with the anterior base rounded or bluntly auricled, margin thickened, entire, or repando-undulate, never serrate (in f. typica) even at the apex; *texture* coriaceous, glossy green in living state, brownish when dried, rachis and particularly the base of petiole copiously fibrillose-scaly; *venation* rather distinct, copiously reticulated in the same manner as in *C. Fortunei*; *sori* rounded, scattered, *indusium* coriaceous, rounded, entire, deppressed at centre.

Kiangsu: Shanghai, on the way to Woosung, *Alexander*; Tseng Ming Hsien, *L. C. Tso 1542*, August 18, 1926; Haichow, Littoral Ledges, *Jacob 36*; Nanking, *10515* (pro parte), cultivated. Fukien: Foo-chow, *Dr. Grijs 56* in herb. Hance; Diongloh, *Chen Ping-en 2408*, July 24, 1925. Shantung: Tsingtau, Lau-shan, *Küntzel 45;* Chefoo, *Hancock 6*. Chekiang: Shihpu, *C. Y. Chiao 14113*, July 11, 1927; *Mary Matthew 10218* in herb. Edinb. Univ. Kwangtung: Swatow, *Gerlach; Dalziel*, Sept. 1899; Yingtak. Tai-shan, *C. C. C. 15074*.

Also Japan, Corea, Formosa and Liu-kiu.

Type from Nagasaki, Japan, collected by Thunberg. In China, this fern is come across only occasionally. Its report as occuring in Africa. Madagascar and Southern India is a mistake for **C. micropterum** (Kunze) Ching, sp. nov. (*Aspidium anomophyllum* var. *micropteris* Kunze, Linnaea **24**: 278. 1851).

Var. **devexiscapulæ** (Koidz. pro sp.) Tagawa, Acta Phytotax. et Geobot. **3**: 60 (1934).

Kwangtung: Lien-hsien, *S. P. Ko 51004;* ibid. Yang Shan, *S. P. Ko 51041;* ibid. Chen Hong, *S. P. Ko 50984*. Kwangsi: Wang-chin, Lu-chen, *R. C. Ching 5468*. Kweichow: Yao Ren Shan, Sanhoa, *Y. Tsiang 6308*.

Also Japan.

Differs from the type in much longer and narrower pinnæ of a lanceolate outline.

The second variety, **acutidens** (Christ, pro sp.) C. Chr. Amer. Fern. Journ. **20**: 49 (1930), with laciniately serrate or lobed pinnæ, is known only from Japan and Corea.

Plate 127. Fig. 1. Habit sketch (natural size). 2. Lower pinna, showing venation and sori (natural size). 3. Indusium (× 24). 4. Large scale from the base of stipe (× 10). 5. Small scale from rachis (× 10).

第一百二十七圖

全緣貫衆(水龍骨科)

CYRTOMIUM FALCATUM (L. fil.) Presl

地下莖短肥，直立，具大卵形之紅褐色密鱗片；葉簇生，柄長二十至三十粉，稻桿色如前種，具二形密鱗片；葉體橢圓形或橢圓披針形，長十五至四十粉，寬六至十三粉，奇數羽狀分裂，小葉一至十對，互生，卵狀鐮形，長漸尖頭或尾狀，基部圓形或上方呈圓耳形，具短柄，全緣，雖極頂無鋸齒，基部小葉長五至八粉，寬三至四粉，上部者漸小，革質，上面呈光綠色，中肋及葉柄具纖維狀之鱗片；葉脈網狀，網眼及子囊羣之着生一如前種，蓋革質，圓形，楯狀着生。

分布： 江蘇，浙江，福建，香港，廣東，廣西，貴州均產之，但不如前種之普通耳；日本，台灣，朝鮮及琉球亦多習見；歐美各國均盆栽以供觀賞。

此外有變種二種：一爲長葉變種 Var. devexiscapulae Tagawa，產於日本及我國南部諸省，其小葉呈長披針形；一爲裂片變種：Var. acutidens (Christ) C. Chr.，產於日本及朝鮮，小葉形體如原種，惟邊緣具大鋸齒或披針形之裂片。

圖註： 1.本種全形(自然大)， 2.下部小葉，表示葉脈及子囊羣(自然大)， 3.子囊羣蓋 (放大二十四倍)， 4.葉柄基部鱗片(放大十倍)， 5.中肋上之鱗片 (放大十倍)。

CYRTOMIUM FALCATUM (L. fil.) Presl

全 緣 貫 衆

C. R. Feng Del. et Lith.

PLATE 128

CYCLOPELTIS CRENATA (Fée) C. Christensen

POLYPODIACEÆ

CYCLOPELTIS CRENATA (Fée) C. Christensen, Ind. Fil. Suppl. III. 64 (1934).

Hemicardion crenatum Fée, Gen. Fil. 283 t. 22A f. 1 (1850-52).

Hemicardion cochin-chinense Fée, l. c. (nom. nud.)

Cyclopeltis Presliana C. Chr. Ind. Fil. 197 (1905), pro parte; Bonap. Notes Pterid. Pt. **7**: 99, 153 (1918); Merr. Enum. Hainan Pl. in Lingnan Sci. Journ. **5**: 9 (1927), non Berkeley, 1857.

Rhizome, short, thick, oblique, scaly; *scales* darkish brown, linear-subulate, 1.5-2 cm long, 1 mm broad, soft, with scarious margin; *fronds* cæspitose, stipe 30-40 cm long, 5 mm thick above base, angular, straminous or brownish, fibrillose-scaly throughout the rachis, impari-pinnate; *lateral pinnæ* 10-15-jugate, alternate, oblique, shortly petiolate, articulated to rachis, lower ones hardly shortened, about 5 cm apart from each other, the upper ones closer, 8-13 cm long, to 3 cm broad, lanceolate, acuminate, base unequal, *i.e.* the upperside oblique, the lower side cordate, with a rounded hamato-recurvate auricle against the rachis, margin sinuate, entire towards apex; *texture* chartaceous, green, costa fibrillose-scaly underneath; *veins* 4-forked, flexuose; *sori* large, rounded, dorsal on veinlets, 3-seriate on each side of costa, *indusium* large, coriaceous, dark brown, peltate, persistent; *spores* bilateral, broadly winged all around.

Hainan: Nodoa, Sha Po Ling, *F. A. McClure 8164, 8168, 8196*, moist shaded ravines of water edge; *Katsumatta*, in herb. Hongkong; Ling Shui Hsien, *F. A. McClure 20068*, May 4-20, 1932; Yai-chow, *F. C. How 71124*; *C. Wang 33487, 34195*; *Eryl Smith 1620, 1633*.

Cochin-China: Annam, Tourane, *Gaudichaud* (type); ibid., *J. & S. M. Clemens 4168*.

This decidedly distinct species, endemic in Cochin-China and the Island Hainan, has hitherto been considered as identical with *C. Presliana* (J. Sm.) Berkeley, now should be known as **C. Cumingiana** (Fée) Ching, comb. nov., as the species was actually first properly described by Fée under his genus *Hemicardion* in Gen. Fil. 283 t. 22A. f. 2, from the Philippine Islands and Malesia, which differs in more numerous lateral, narrower falcate and close pinnæ, of which the lower ones are gradually shortened towards the very short stipe, with deeply cordate-auricled base at *both* sides and in much thicker leaves, turning blackish when dried.

Plate 128. Fig. 1. Habit sketch (natural size). 2. Portion of pinna, showing venation and position of sori (× 3). 3. Scale from the base of stipe (× 10). 4. Basal part of pinnæ, showing articulation to rachis (× 10). 5. Spores (enlarged).

第一百二十八圖

擬貫衆(水龍骨科)

CYCLOPELTIS CRENATA (Fée) C. Christensen

地下莖肥厚，斜出，具黃褐色之線狀密鱗片，長達二粉，寬僅一糎，質軟，邊具小鋸齒；葉簇生，柄長三十至四十粉，稻桿色或黃褐色，具黃色纖維狀之鱗片，葉體橢圓形，奇數羽狀分裂，小葉十至十五對，互生，具短柄，節狀着生於中肋，長八至十三粉，寬達三粉，披針形，漸尖頭，基部一對幾與上部者等長，基部不等，上方呈圓耳形，下方斜形，葉緣向上部呈淺波狀，紙質，綠色，中肋及主脈下面具纖維狀密鱗片；葉脈分離，三至四叉，曲折；子囊羣大圓形，着生於小脈上，三列，蓋大，圓形，革質，黃褐色，楯狀着生，宿存或久則脫落；胞子卵形，具闊翅。

分布： 瓊洲島及安南特產。

本種形體頗似 C. Cumingiana(Fée) Ching ，然後者之葉體具短柄，小葉密接，位於下部者之葉體具短柄，小葉密接，位於下部者漸短，其基部呈等形之圓耳形，故易與本種區別。

圖註： 1. 本種全形(自然大)， 2. 小葉之一部，表示其葉脈及子囊羣之位置(放大三倍)， 3. 葉柄基部鱗片(放大十倍)， 4. 葉與中肋節狀着生情形(放大十倍)， 5. 胞子(高倍放大)。

CYCLOPELTIS CRENATA (Fée) C. Christensen

擬　貫　衆

C. R. Feng Del. et Lith.

PLATE 129

POLYSTICHUM FIMBRIATUM Christ

POLYPODIACEÆ

POLYSTICHUM FIMBRIATUM Christ, Bull. Acad. Géogr. Bot. (1906) 237; C. Chr. Ind. Fil. I. 64 (1912).

Rhizome thick, erect, clothed in a dense tuft of shining brown linear-subulate *scales* over 2 cm long; *fronds* caespitose, stipe 15-18 cm long, thick, densely clothed in large, ovate-acuminate, spread or deflexed, rufo-brown scales, lamina lanceolate, to 30 cm long, 5-6 cm broad, base truncate, apex short-acuminate, pinnate; *pinnæ* 25-36-jugate, alternate, imbricate, very shortly petiolate, basal ones as long as those above, 2.5-3 cm long, 1.3 cm broad, oblong-falcate, blunt, base deltoidly auricled above (auricle sometimes free in the lower pinnæ), cuneate below, with truncate upper inner edge parallel to, or imbricating on, the rachis, margin subentire with aristate teeth all around, rachis and underside of lamina copiously fibrillosely scaly; *texture* thick coriaceous; *veins* prominent underneath, pinnate in auricles and triforked upwards; *sori* rounded, uniseriate, nearer to the margin than to the costa, terminating the anterior basal veinlet of each group, *indusium* thick, brown, entire, rounded, peltately attached.

Kweichow: South of Tin-fan, *Cavalerie and Fortunat 1842* (type), Oct. 1904; Ping-chow, *Y. Tsiang 7134*, Sept. 14. 1930.

This species represented so far only by two collections from the southern part of Kweichow, proves to be so remarkably distinct that there is no known Chinese species to which it can be closely compared. It belongs to the group of *P. nepalense* (Spreng) from which it differs altogether in densely scaly stipe and rachis, in entire and aristately serrate pinnæ with blunt apices and without cartilaginous teeth and the characteristically ovate-cuspidate appressed scales on the underside of pinnæ and in supramedial sori with coriaceous and much smaller indusia. In the gross habit, our fern appears related to *Cyrtomium nephrolepioides* Christ from the same region, but differs in its free venation, oblong-falcate pinnæ with unequal auricled base and different scale characters.

Plate 129. Fig. 1. Habit sketch (natural size). 2. Pinna (× 2). 3a-b. Scales from stipe (× 10). 4. Scale from rachis (× 12).

第一百二十九圖

瓦鱗耳蕨(水龍骨科)

POLYSTICHUM FIMBRIATUM Christ

地下莖肥厚，直立，具光亮黃褐色之線形密鱗片，長逾二粉；葉簇生，葉長十五至十八粉，具大卵形之開張密鱗片；葉體爲披針形，長達三十粉，寬五至六粉，基部截形，一回羽狀分裂，頂部爲短漸尖頭，羽狀深裂；小葉二十五對至三十六對，互生，密接或瓦覆，長二·五至三粉，寬一·三粉，鐮橢圓形，鈍頭，基部具短柄，不等，上方呈尖耳形（有時分離），下方斜形，葉緣具長刺狀之密鋸齒，中肋及主脈下面具纖維狀之密鱗片，革質，葉脈三叉或羽狀分叉；子囊羣圓形，一列，近於葉緣，着生於每羣基部上方之一小脈之端，蓋革質，圓形，黃褐色，楯狀着生。

分布： 貴州南部特產，他處尚未之見。

本種爲本屬特殊之一種，罕有與此相似之種，僅採得二次，蓋爲珍品也。

圖註： 1. 本種全形(自然大)， 2. 小葉，表示其葉脈及子囊羣着生情形(放大二倍)， 3. 葉柄上之鱗片（放大十倍）， 4. 中肋之鱗片（放大十二倍）。

POLYSTICHUM FIMBRIATUM Christ

瓦 鱗 耳 蕨

C. R. Feng Del. et Lith.

PLATE 130

POLYSTICHUM OTOPHORUM (Franch.) Beddome

POLYPODIACEÆ

POLYSTICHUM OTOPHORUM (Franch.) Beddome, Handb. Ferns, Brit. Ind. etc. Suppl. **42** (1892); Diels in Engl. u. Prantl: Nat. Pflanzenfam. **1**: 4. 190 (1899); C. Chr. Ind. Fil. 585 (1905); Acta Hort. Gothob. **1**: 68 (1924); Christ, Bot. Gaz. **51**: 345 (1911).

Aspidium otophorum Franch. Nouv. Arch. Mus. II. **10**: 116 (1887).

Rhizome thick, short, erect, densely scaly; *scales* large, dark brown, ovate-acuminate, fimbriate; *fronds* caespitose, stipe 5-10 cm long, clothed in dense spread, lanceolate blackish and fibrillose scales, lamina lanceolate, 15-22 cm long, 4-5 cm broad, pinnate under the short, pinnatifid, acuminate apex; *pinnæ* 20-30-jugate, patent, shortly petiolate, the basal ones deflexed and as long as those above, 2-2.5 cm long, 7 mm broad above the base, which is provided above with a prominent auricle, either adnate or free, obliquely cuneate below, margin regularly serrate with long aristate teeth; *texture* rigidly coriaceous, rachis and underside of pinnæ more or less fibrillose-scaly; *veins* pinnate in auricle, 3-forked upwards; *sori* small, nearer to the margin than to the costa, terminating the anterior basal veinlet of each group above the auricle, *indusium* coriaceous, rounded.

Szechwan: Moupin, *David* (type) (1890); Mt. Omei, *E. H. Wilson 2624, 2596, 2598,5363A*; *Brown 26, 136*; Kuan Hsien, *F. T. Wang 20422* (f. typica); Tang Ho, *Legendre 1614*; Yu-chi-kou, *Harry Smith 2354*; *T. T. Yü 4611, 2742* (f. ad *P. xiphophyllum*).

A very pretty and distinct endemic species of the group of *P. lobatum* (L.) of Northern Europe. The nearest Chinese relative to this fern is *P. xiphophyllum* (Baker) from Mt. Omei, which differs chiefly in bipinnatifid frond of much larger size.

Plate 130. Fig. 1. Habit sketch (natural size). 2. A pinna from a larger form (natural size). 3. Pinna from the typical form (× 3). 4-5. Scales from stipe (× 14).

第 一 百 三 十 圖

高 山 耳 蕨 (水 龍 骨 科)

POLYSTICHUM OTOPHORUM (Franch.) Beddome

地下莖肥短，直立，具大卵形深櫻色瓦覆狀之密鱗片；葉簇生，柄長五至十粉，具二形密鱗片，葉體披針形，長十五至二十二粉，寬四至五粉，一回羽狀分裂，頂部漸尖頭，一回深裂，小葉二十至三十對，密接，具短柄，開展，位於基部者下向，與上部者等長，長二至二·五粉，寬約七糎，披針形，漸尖頭，基部不等，上方具尖耳形之深裂，合生或分離，下方斜形，葉緣具刺狀剛鋸齒，硬革質，中肋及主脈下面具纖維形之鱗片；葉脈三叉，在耳形小葉者羽狀分叉；子囊羣小圓形，近於葉緣，一列，着生於每羣基部上方之一小脈之端，蓋圓形，革質，灰色。

分布： 四川西部高山特產，他處尚未之見。

本種亦爲我國西部特種蕨類，略似歐洲北部產之 Polyst. lobatum (Linn)，然各部則大異。

圖註： 1. 本種全形(自然大)， 2. 大形小葉(自然大)， 3. 模式標本之小葉(放大三倍)， 4-5. 葉柄上之鱗片（放大十四倍）。

POLYSTICHUM OTOPHORUM (Franchet) Beddome

高 山 耳 蕨

C. R. Feng Del. et Lith.

PLATE 131

POLYSTICHUM OMEIENSE C. Christensen

POLYPODIACEÆ

POLYSTICHUM OMEIENSE C. Christensen (non Christ, 1909), Ind. Fil. 67 (1905), 585 (1906); Acta Hort. Gothob **1: 72 (1924).**

Aspidium carvifolium Baker, Journ. Bot. (1888) 228; Christ, Bull. Bot. Soc. Ital. (1901) 295; Bull. Acad. Géogr. Bot. (1906) 114 (non Kunze, 1851).

Polystichum carvifolium Christ, Bull. Herb. Boiss. **6**: 969 (1898); Diels in Engl. Jahrb. **29**: 194 (1900).

Polystichum Faberi Christ in Lecomte, Not. Syst. **1**: 37 (1909).

Rhizome short, oblique, densely scaly at apex; *scales* small, brown, ovate-acuminate, subentire; *fronds* cæspitose, 10-18 together, stipe to 13 cm long, straminous, terete, firm, sparcely clothed in small, ovate-acuminate, uniform scales, lamina slightly oblanceolate, 15-25 cm long, 4-7 cm broad, acuminate, finely tripinnate; *pinnæ* numerous, close, alternate, subsessile, patent, lanceolate, 2-3 cm long, lower ones somewhat shortened and deflexed; *pinnules* 6-12-jugate, oblong-ovate, base long-attenuate and decurrent along deeply grooved and narrowly winged costa; *ultimate pinnules* 2-3-jugate, generally deeply bifid into linear-subulate uni-nerved *segments*, hardly over 1 mm broad, with sharp point; *texture* herbaceous, green, underside sparcely scaly; *sori* small, one to each segment, terminating the veinlet some distance below the apex of segment, *indusium* large, rounded, membranaceous, as broad as segment, soon falls off.

Szechwan: Mt. Omei, *E. Faber 1027* (type); *E. Faber 14* in herb. Hance; ibid *Scallan*; *Wilson 5267*; *W. P. Fang 2494*, 3155; Nanchuan, *W. P. Fang 5836, 6118, 7446* (without exact locality). Yunnan: Mengtze, *Henry 9050*; *Hancock 20* (1893). Kweichow: Pin-fa, *Cavalerie 2426, 7094* (1907); Tou-shan, *Cavalerie 2536*.

This is one of the most distinct species of the group of *Polystichum* from West China and Himalaya, which is characterized by finely dissected fronds with linear-subulate uni-nerved entire and sharply pointed ultimate segments. *P. alcicorne* (Baker) from the same locality is a very close relative, which differs, however, in more coarsely dissected frond of a much stouter habit and in the presence on the stipe and rachis underneath of the large ovate, membranaceous brown persistent scales.

Plate 131. Fig. 1. Habit sketch (natural size). 2. Pinnule (× 14). 3. Indusium (× 45). 4. Scale from rhizome (× 40).

第一百三十一圖

峨眉耳蕨(水龍骨科)

POLYSTICHUM OMEIENSE C. Christensen

地下莖短而直立或斜出，端具橙色卵形小鱗片；葉多數簇生，柄長達十三粉，稻桿色，堅實，葉體倒披針形，長十五至二十五粉，寬四至七粉，漸尖頭，細密三回羽狀分裂，一回小葉多數，密互生，幾無柄，開展，披針形，長二至三粉，基部者稍短且下向；二回小葉六至十二對，卵糯圓形，基部漸狹，循中肋延長，末回小葉二至三對，通常深二裂，裂片短，線形，寬不及一糎，銳尖頭，全緣，具一小脈，不達於頂，紙質，綠色，下面略具小鱗片；子囊羣小圓形，每裂片一個，着生於葉脈之端，蓋圓形，厚膜質，與裂等寬或較寬，不久脫落。

分布： 四川峨嵋山，雲南之蒙自及貴州南部。

本種爲我國西部高山特產，其葉體細密分裂成線形尖頭之小裂片，寬不及一糎，具一小脈，頂端著一個子囊羣。

圖註： 1. 本種全形(自然大)， 2. 二回小葉(放大十四倍)， 3. 子囊盖(放大四十五倍)， 4. 地下莖上之鱗片(放大四十倍)。

POLYSTICHUM OMEIENSE C. Christensen

峨 眉 耳 蕨

C. R. Feng Del. et Lith.

PLATE 132

PELLAEA SMITHII C. Christensen

POLYPODIACEÆ

PELLAEA SMITHII C. Christensen, Acta Hort. Gothob. **1:** 84 t. 18 (1924); Ind. Fil. Suppl. III 135 (1934).

Rhizome short, erect, densely scaly at the apex and the base of stipe; *scales* small, linear, rigid, brown, shining, the outer ones are often shining black; *fronds* numerous, caespitose, stipe 6-10 cm long, firm, rounded, sparcely scaly throughout, brownish-straminous, lamina ovate-oblong or deltoid, 4-6 cm long, 4 cm broad, coriaceous, bipinnate, rachis glandular, grooved above; *lateral pinnæ* 3-4-jugate under the pinnatifid deltoid apical part similar to the lateral ones, sessile, opposite or subopposite, deltoid, to 2 cm long and broad, the basal pair hardly larger than those above, pinnatifid to the costa into 3-5 pairs of linear entire, acute *segments* 1-1.5 cm long, 1-1.2 mm broad, the lower ones adnate, the upper ones decurrent, costa and costules deeply sulcate above, prominently raised underneath; *veins* in segments hidden, biforked, veinlets oblique; *sori* intra-marginal, distinct, terminating each veinlet, *indusium* linear, continuous till very apex, covering the entire under surface, gray at first, brown at last, persistent, with glandular-ciliate margin; *spores* small, minutely verrucose.

Szechwan bor-occid.: Hsu-ting, *Harry Smith 4799* (type), on sunny rocks; *E. H. Wilson 2664* (1908). Yunnan: east of Yung-ming, *Forrest 21238, 10463.*

This peculiarly distinct little fern is closely related to *P. nitidula* (Wall.) Baker from Northern India and South-western China, differs in still simpler pinnation, much lighter-colored stipe and rachis, which are only sparcely glandular, and in much broader indusium. As first observed by its author, all the specimens cited above are found to be fertile in every segment.

Plate 132. Fig. 1. Habit sketch (natural size). 2. Portion of segment, showing venation, indusium and position of sori (× 6). 3. Scale from rhizome (× 20).

第一百三十二圖

史氏旱蕨(水龍骨科)

PELLAEA SMITHII C. Christensen

地下莖短而直立，端具線形硬質櫻色光亮小鱗片；葉多數簇生，柄長六至十粉，堅實，橫切面圓形，略具鱗片，黃稻桿色，葉體卵糯圓形或三角形，長四至六粉，寬四粉，革質，二回羽狀分裂，中肋上面具疏腺毛及一溝槽，一回小葉三至四對，對生或上部者亞對生，無柄，三角形，長寬達二粉，頂端小葉同形，羽狀深裂，裂片三至五對，線形，急尖頭，長一至一·五粉，寬一至一·二糎，全緣，基部沿中肋延長，主脈上面呈溝槽，下面突出，側脈斜出，二叉；子囊羣貼近葉緣，着生於小脈頂端，蓋深褐色，膜質，線形，直達頂端，寬達於主脈，與其對面之蓋相接。

分布： 四川西部及雲南西北部之高山，生於露出岩石上。

本種形體頗類 Pellaea nitidula Baker，然後者之葉柄爲深栗色或烏木色，葉體分裂較密，中肋上面具較長較密之短剛毛，故易與本種區別。

圖註： 1. 本種全形(自然大)， 2. 裂片之一部，表示其葉脈及子囊羣之位置及其蓋(放大六倍)，3. 地下莖上之鱗片（放大二十倍）。

PELLAEA SMITHII C. Christensen

史 氏 旱 蕨

C. R. Feng Del. et Lith.

PLATE 133

CHEILANTHES DUCLOUXII (Christ) Ching

POLYPODIACEÆ

CHEILANTHES DUCLOUXII (Christ) Ching in C. Chr. Ind. Fil. Suppl. III. 54 (1934).

Doryopteris Duclouxii Christ, Bull. Acad. Géogr. Bot. (1902) 231; Bull. Soc. Bot. France **52**: Mém. 1. 58 (1905); C. Chr. Ind. Fil. 244 (1906); Acta Hort. Gothob. **1**: 86 (1924).
Doryopteris muralis Christ, Bull. Acad. Géogr. Bot. (1904) 111; C. Chr. Ind. Fil. 244 (1905).
Doryopteris Mairei Brause, Hedwigia **54**: 206 t. 4. f. J. (1914).

Rhizome short, erect; *scales* at the apex blackish, lanceolate, rigid and opaque; *fronds* cæspitose, stipe 14-25 cm long, glabrous, glossy, dark castaneous, terete throughout, lamina deltoid, semi-bipinnate, 9-12 cm each way, falvous, coriaceous, glabrous on both sides, rachis, costa and costules underneath shining castaneous; *lateral pinnæ* 4-5-jugate under the lanceolate, entire or pinnatifid apical part, all connected by a narrow wing along rachis, or in full-grown plants the basal pair separated from those above by wingless rachis, basal pinnæ much the largest, sub- or semi-deltoid, 5-7 cm long, 4-5 cm broad, semi-pinnatifid, *i.e.* only the lower side of costa with 3-5 lanceolate *segments*, of which the basal ones much the longest, 4-5 cm long, 5 mm broad above base, entire throughout, or sometimes with a few additional short segments on the lower side, while the upperside of costa is entire or irregularly pinnatifid with short segments; the upper lateral pinnæ generally simple, entire, falcate, or sometimes the second pair also semi-pinnatifid; *veins* in segments free, dichotomously forked, hidden; *sori* terminating the veinlets, *indusium* gray, membranaceous, entire, continuous to the very apex of segment; *spores* spherical, echinose.

Yunnan: *Ducloux* (type), Dec. 23, 1896; Mengtze, *Hancock 31*; *Tanant* (1897); *Maire 2746, 2737*; *Forrest 298*; *Ducloux 1351* (1909); *K. K. Tsoong*; Makong; *E. E. Maire*, pro parte. Szechwan: Omeï region, *H. D. Brown 80* (1928). Kweichow: Pin-fa, *Cavalerie 4228, 1212* (type of *Dory. muralis*).

A distinct species but closely related to *Ch. argentea* var. *obscura* Christ, differs in larger size and less divided frond with lanceolate, subhorizontally patent pinnæ of falvous color, of which the lower ones are semi-pinnatifid.

Var. **sulphurea** Ching, var. nov.

Doryopteris Duclouxii f. *argentea* Christ, Bull. Soc. Bot. France **52**: Mém. 1. 58 (1905).
Doryopteris Mairei Brause, Hedwigia **54**: 206 t. 4. f. J (1914).

Differs from the type in frond being coated underneath with sulphur-yellow waxy powder.

Szechwan: Nin-yuan Hsien, *Harry Smith 1830*; *Wilson 5297*; *Handel-Mazzetti 2790*. Yunnan: Tali, *Forrest 13499*; Ngaykio, *Ducloux 6343* (1909); Tchang Shan, *Ducloux 3363*; Nieou Ko Shan, *Ducloux 6965*; Pin-tchouan, *Ducloux 6930*; Mt. Mao Kou Tchang, near Ta-pin-tze, Tali, *Delavay 9* (1883).

This variety must not be confused with *Ch. Veitchii* (Christ) Ching from Szechwan, with which it is very closely related in habit, from which it differs above all in stipe being not glossy black and fronds not so finely dissected.

Plate 133. Fig. 1. Habit sketch (natural size). 2. The same, a simpler form (natural size). 3. The same, a young plant (natural size). 4. Portion of segment, showing venation (× 6). 5. Scale from the base of stipe (× 15).

第一百三十三圖

杜氏粉背蕨(水龍骨科)

CHEILANTHES DUCLOUXII (Christ) Ching

地下莖短而直立，端具淡黑色而硬質不透明之披針形鱗片：葉簇生，柄長十四至二十五粉，光亮無鱗毛，深栗色，橫切面圓形，葉體卵三角形，半二回羽狀分裂，長寬各九至十二粉，淡黃色，革質，兩面光滑，下面無白粉，中肋及主脈下面呈光亮之栗色，一回小葉四至五對，開展，頂部爲線披針形全緣或羽狀深裂，各小葉基部合生，惟基部一對分離，較大，下邊羽狀深裂，上邊全緣，二回小葉線披針形，三至五數，位於基部者最長，長約四至五粉，寬五糎，其上者漸短，有時下部小葉再羽狀深裂，上部一回小葉爲披針形，全緣或有時第二對亦爲半羽狀深裂，不具鋸齒；側脈細，數回對稱分叉，不顯明；子囊羣貼近葉緣，着生於小脈之端，蓋膜質，線形，達於裂片之極端。

分布： 雲南，四川峨嵋山及貴州南部。

本種爲我國西部特產，其形體酷似普通習見之粉背蕨 (Ch. argentea Kze.)，所不同者爲其形體較大，葉體分裂較少及其開展之一回小葉，通常概爲半羽狀分裂是也，此外另有一變種： Var. sulphurea Ching, ，葉背面具硫黃色粉。

圖註： 1. 本種全形(自然大)， 2. 同上，形體較單簡(自然大)， 3. 同上，幼植物(自然大)，4. 末回裂片之一部，表示其葉脈(放大六倍)， 5. 葉柄基部之鱗片（放大十五倍）。

CHEILANTHES DUCLOUXII (Christ) Ching

杜 氏 粉 背 蕨

C. R. Feng Del. et Lith.

PLATE 134

CHEILANTHES HANCOCKII Baker

POLYPODIACEÆ

CHEILANTHES HANCOCKII Baker, Kew Bull. (1895) 54; Christ, Bull. Soc. Bot. France **52**: Mém. 1. 58 (1905); C. Chr. Ind. Fil. 175 (1905); Suppl. III. 54 (1934).

Cheilanthes taliensis Christ, Bull. Soc. Bot. France **52**: Mém. 1. 58 (1905); C. Chr. Ind. Fil. 180 (1906); Acta Hort. Gothob. **1**: 89 (1924); Contr. U. S. Nat. Herb. **26**: 308 (1931).

Cheilanthes Henryi Christ, Bull. Acad. Géogr. Bot. **16**: 133 (1906); C. Chr. Ind. Fil. Suppl. 1. 18 (1912).

Cheilanthes Wilsoni Christ, l.c. 132; C. Chr. Ind. Fil. Suppl. I. 18 (1912).

Cheilanthes Bonatiana Brause, Hedwigia **54**: 203 t. 4 f. E (1914); C. Chr. Ind. Fil. Suppl. II. 8 (1916).

Rhizome short, erect, densely radicose; *scales* at the apex dark brown, lanceolate-subulate, rigid, extending upward to some distance above the base of stipe; *fronds* cæspitose, stipe castaneous, terete throughout, 7-20 cm long, lamina pentagonous or subdeltoid, 7-14 cm long and broad, tripinnate or tripinnatifid; *pinnæ* 5-7-jugate, the lower ones petiolate, far apart, opposite, the basal ones much the largest, deltoid, 5-12 cm long; *pinnules* 5-7-jugate, the lower basal one much the largest and basicopically produced, 3-6 cm long, shortly petiolulate, the upper ones on the same side of costa sessile and adnate, gradually shortened, those on the upperside of costa are of about equal length, sessile, adnate, and much shorter than those below, alternate; *ultimate pinnules* oblong, blunt, lobato-incised with rounded *lobes*, or only crenate in small plants; rachis and rachilets deeply grooved above; *texture* herbaceous, *veins* distinct, 2-3-forked or simple towards apex in lobes; *sori* terminating the veinlets, distinct at first, finally subconfluent, *indusium* membranaceous, oblong-ovate, distinct or subcontinuous; *spores* bilateral, light brown.

Yunnan: Mengtze, *Hancock 63* (type) (1893); Szemeo, *Henry 12532* (type of *Ch. Henryi*; Shit Ping, *Henry 13223*; *Ducloux 1342*; Siao-su-long, *E. E. Maire* (November); *2749, 1342*; *Ducloux 1343* (pro parte); environs de Yunnan-sen, *Ducloux & Bodinier 669* (1898); Tchang-shan, *Ducloux 2361* (1906); *Cavalerie 4710* (1900-20); environs de Hay Tien, *Ducloux 2427* (1904); Lao-kong Shan, *Ducloux 5062*; Tcheou Kia-tze-tang, *Maire 1393* (type of *Ch. Bonatiana*); Tali, *Delavay 1187* (type of *Ch. taliensis*); Likiang Snow Range, *J. F. Rock 6000, 6047*. Szechwan occid: *Wilson 5290* (type of Ch. *Wilsoni*); Nui-yuan Hsien, at Lu-shan, *Harry Smith 1831*.

This distinct and endemic species belongs to the group of *Ch. tenuifolia* Sw. from which it differs altogether in the rigid, dark-brown lanceolate scales on rhizome, less divided lamina of a pentagonous outline, with ultimate segments of entirely different shape. All specimens cited above are very uniformly constant in all respects except size, in which the type represents a large form with pentagonous lamina and acuminate apex, on stipe twice as long; while *Ch. Wilsoni* and *Ch. taliensis* represent small, stunted form with less divided fronds.

Plate 134. Fig. 1. Habit sketch, smaller form (natural size). 2. segment, showing venation and sori (× 10). 3. Habit sketch from co-type (natural size). 4. Scale from rhizome (× 16).

第一百三十四圖

韓氏粉背蕨(水龍骨科)

CHEILANTHES HANCOCKII Baker

地下莖短而直立，端具深褐色硬質狹披針形之鱗片；葉簇生，柄淡栗色，橫切片面呈圓形，長七至二十粉，基部略具鱗片，葉體五角形或三角形，長寬各七至十四粉，三回羽狀分裂或深裂，頂部漸尖頭，羽狀深裂，一回小葉五至七對，位於下部者具柄，基部一對最大，三角形，長五至十二粉，二回小葉五至七對，基部下方一對最大，長三至六粉，具短柄，餘皆無柄，位於中肋上邊者均等大，合生；末回小葉橢圓形，鈍頭，邊爲深波狀或深裂，裂片圓形，各位中肋上面具深溝槽，紙質；葉脈明顯，二至三叉，或單一；子囊羣貼近葉緣，着生於小脈之端，蓋膜質，橢圓形，呈波狀。

分布： 雲南，四川。

本種爲我國川滇特產，尤以在滇省爲普通，其形體大小不一，故其名甚多。

圖註： 1. 本種小形全形(自然大)， 2. 二回小葉，表明其葉脈及子囊羣(放大十倍)， 3. 本種模式標本全形(自然大)， 4. 地下莖上之鱗片(放大十六倍)。

CHEILANTHES HANCOCKII Baker

韓 氏 粉 背 蕨

C. R. Feng Del. et Lith.

PLATE 135

CHEILANTHES CHUSANA Hooker

POLYPODIACEÆ

CHEILANTHES CHUSANA Hooker, Sp. Fil. **2**: 95 t. 106B (1852); Ching, Bull. Dept. Biol. Sun Yatsen Univ. No. **6**: 26 (1933); C. Chr. Ind. Fil. Suppl. III. 54 (1934).

Cheilanthes mysuriensis var. *chusana* Christ, Bull. Bot. Soc. Ital. (1901) 293; Bull. Acad. Géogr. Bot. (1907) 149; C. Chr. Acta Hort. Gothob. **1**: 91 (1924).

Cheilanthes mysuriensis Hk. et Bak. Syn. Fil. 135 (1867); C. Chr. Ind. Fil. 175 (1905), pro parte: Christ, Bull. Acad Géogr. Bot. (1906) 251; ibid. (1910) 13; Ogata, Ic. Fil. Jap. **2**: t. 60 (1929); Wu, Bull. Dept. Biol. Sun Yatsen Univ. No. **3**: t. 98 (1932), non Wall. 1828.

Cheilanthes Fordii Baker, Journ. Bot. (1879) 304; Dunn & Tutch. Fl. Kwangt. & Hongk. 339 (1912).

Adiantopsis Fordii C. Chr. Ind. Fil. 22 (1905).

Cheilanthes Bockii Diels in Engl. Jahrb. **29**: 199 (1900); C. Chr. Ind. Fil. 172 (1905); Acta Hort. Gothob. **1**: 91 (1924).

Cheilanthes mysuriensis var. *Giraldii* Christ in Lecomte, Not. Syst. **1**: 51 (1909).

Cheilanthes tenuifolia Hk. (non Sw.) in Blakiston, Five Months on the Yangtze 362 (1862).

Cheilanthes Boltoni Cop. in Perkins, Fragm. Fl. Phil. 186 (1905); C. Chr. Ind. Fil. 663 (1906).

Rhizome short, erect, densely scaly; *scales* rufo-brown, lanceolate-subulate; *fronds* tufted, stipe 2-5 cm long, dark castaneous, shining, terete with a channel above, densely scaly throughout, lamina lanceolate, 8-20 cm long or longer, 1.5-6 cm broad, shortly acuminate, sub-bipinnatifid; *pinnæ* 10-15-jugate, subsessile, the lower ones more or less shortened, the middle ones 1.4 cm long, or longer, 0.5-2 cm broad, oblong-deltoid, acute or obtusish, pinnatifid nearly down to costa into 4-6 oblong, crenate or erosed *segments*, with 2-4 oblique and simple veinlets to each tooth, rachis more or less scaly, castaneous, costa of the same color underneath, both sides glabrous; *texture* herbaceous, greenish; *sori* globose, distinct on each crena with the reflexed margin of an oblong shape as *indusium*.

Numerous specimens have been seen from Chekiang (including type, leg. Alexander in Chusan Island), Kwangtung (including type of *Ch. Fordii*), Fukien, Kwangsi, Kiangsi, Hupeh, Kweichow, Szechwan (including type of *Ch. Bockii*, leg. Rosthorn 1766 in Nanchuan) and Kiangsu. A complete enumeration of the specimens from the above localities will be given later in my "Studies of Chinese Ferns."

Specimens from Japan (Nagasaki, leg. Maximowicz 25), Tonkin (Balansa 129), Formosa and Luzon are also examined.

The present fern, now found to be very common in Eastern, Southern and Central China and Japan, has generally been considered as identical with *Ch. mysuriensis* Wall. of East India from which it differs in characters as already noted in my previous paper (Cf. Bull. Dept. Biol. Sun Yatsen Univ. No. **6**: p. 26).

Plate 135. Fig. 1. Habit sketch (natural size). 2. The same, a larger form (natural size). 3. Pinna (× 3). 4. Segment, showing venation and position of sori (× 8). 5. Scales from the base of stipe (× 16). 6. Scales from rachis (× 13). 7. Spores (enlarged).

第一百三十五圖

舟山粉背蕨(水龍骨科)

CHEILANTHES CHUSANA Hooker

地下莖短而直立，端具紅褐色狹披針形之厚質鱗片；葉簇生，柄長二至五粉，深栗色，光亮，上面具淺溝糟，遍體具小鱗片，葉體披針形，長八至二十粉或過之，寬一·五至六粉，短漸尖頭，二回羽狀深裂，一回小葉十至十五對，幾無柄，橢圓三角形鈍頭，長一至二粉，位於下部者漸短，邊緣波形，紙質，兩面光滑，無白粉，中肋及主脈下面均爲栗色，葉脈二至三叉，子囊羣圓球形，彼此不連接，位於每一小裂片之端，蓋橢圓形，或半圓形，不連接。

分布： 浙江，廣東，福建，廣西，江西，湖北，貴州，四川，江蘇；日本，朝鮮，菲列濱及交趾亦產之。

本種爲本區域內習見之種，形體大小不一，昔人誤認爲與印度產之 Ch. mysuriensis Wallich 相同，實則大相逕庭。

圖註： 1. 本種全形(自然大)， 2. 同上，大形(自然大)， 3. 小葉(放大三倍)， 4. 裂片，表示葉脈及子囊羣之位置(放大八倍)， 5. 葉柄基部之鱗片(放大十六倍)， 6. 莖上鱗片(放大十三倍)，7. 胞子(高倍放大)。

CHEILANTHES CHUSANA Hooker

舟山粉背蕨

C. R. Feng Del. et Lith.

PLATE 136

CHEILANTHES TRICHOPHYLLA Baker

POLYPODIACEÆ

CHEILANTHES TRICHOPHYLLA Baker, Ann. Bot. **5**: 211 (1891); Diels in Engl. u. Prantl: Nat. Pflanzenfam. **1**: 4. 276 (1899); C. Chr. Ind. Fil. 180 (1905); Acta Hort. Gothob. **1**: 91 (1924); Christ, Bull. Soc. Bot. France **52**: Mém. 1. 59 (1905); Bull. Acad. Géogr. Bot. (1906) 133; Hand-Mzt. Symb. Sin. **6**: 40 (1929).

Cheilanthes undulata Hope et C. H. Wright, Gard. Chron. III. **34**: 397 (1903)

Rhizome short, oblique, densely radicose; *scales* at the apex dense, narrowly lanceolate, black, rigid; *fronds* subcæspitose, stipe 20-30 cm long, ebeneous or dark castaneous, terete, except a narrow groove above, densely clothed from the base upward and throughout the flexuose rachis in fine, reddish-brown, appressed articulated hairs, which also cover the both sides of leaves, lamina elongate-deltoid, 20-35 cm long, 7-15 cm broad at base, tripinnatifid; *pinnæ* 6-10-jugate under the deltoid, pinnatifid apex, alternate, horizontally patent, or the lower ones more or less deflexed, all petiolate, the basal ones much the largest, 8-10 cm long, 5 cm broad, elongate-deltoid, on petiole 1 cm long; *pinnules* 4-5-jugate, alternate, broadly deltoid, shortly petiolulate, 2.5 cm long, 2 cm broad, base truncate, horizontally patent, pinnatifid to a short distance from costule into 2-4 pairs of oblong-lanceolate, blunt *segments*, of which the basal ones 1 cm long, 2-2.5 mm broad; *texture* herbaceous, brownish underneath, greenish above; *veins* flabellulately forked, very oblique to the flexuose costule of segment; *indusium* narrow, brown, continuous, crenate, ciliate.

Yunnan: Lan Kong, *Delavay* (type); Ta-pin-tze, near Tali, *Delavay 31, 1200, 1201*; Yan-in-shan, *Delavay 1165, 1174*; Chonang-che-teon, *Delavay 1165* (1883); Salwin, *G. Forrest 18331* (1917-19); *1034*; *Handel-Mazzetti 6303* (1914-18); Pinchow, *Ducloux 6986, 7042*; environs de Yunnan-sen, *Ducloux 6338*; *A. Henry 13220* (type of *Ch. undulata*). Szechwan: *E. H. Wilson 5289* (1910). Tibet border: *Capt. Kingdon Ward 225*.

One of the most distinct endemic species of the genus, with which *Ch. Delavayi* Baker from the same locality is the only close relative, which differs in rachis and rachilets being not flexuose, glabrous surfaces of leaves and decidedly cordate pinnules. It appears to be a common fern in the north-western part of Yunnan, but not known elsewhere, besides Wilson's plant from western Szechwan.

Plate 136. Fig. 1. Habit sketch (natural size). 2. Segment, showing venation and position of sori (× 10). 3. Scale from rhizome (× 27). 4. Hairs from leaf surface (× 40).

第一百三十六圖

毛粉背蕨(水龍骨科)

CHEILANTHES TRICHOPHYLLA Baker

地下莖短而斜出，端具黑色厚質狹披針形之密鱗片；葉亞簇生，柄長二十至三十粉，烏木色或深栗色，上面具一淺溝槽，遍體被紅褐色之短毛，葉體爲長三角形，長二十至三十五粉，寬七至十五粉，三回羽狀深裂，兩面被同樣之密毛，紙質，下面呈淡褐色，各位中肋呈強度曲折，一回小葉六至十對，互生，具柄，水平開展，或多少下向，頂部三角形，羽狀深裂，基部一對最大，長八至十粉，寬五粉，長三角形，柄長達一粉，二回小葉四至二對，互生，長三角形，長達三粉，寬約二粉，基部截形，水平開展，羽狀深裂，裂片二至四對，糖圓披針形，鈍頭，位於基部者長達一粉，寬約三類；葉脈扇狀三叉，斜向上出；子囊羣着生於葉邊小脈之端，蓋膜質，線形，通直，邊呈波狀，具捷毛。

分布： 雲南，四川，及西藏東部。

本種爲我國西部高山特產，極爲奇特，與此相類者惟 Ch. Delavayi Baker，然其各位中肋不呈強度曲折，葉兩面頗光滑，末回小葉之基部呈心臟形，故易與本種區別。

圖註： 1. 本種全形(自然大)， 2. 裂片，表示其葉脈及子囊羣之位置(放大十倍)， 3. 地下莖上之鱗片(放大二十七倍)， 4. 葉面之紅褐色毛(放大四十倍)。

CHEILANTHES TRICHOPHYLLA Baker

毛粉背蕨

C. R. Feng Del. et Lith.

PLATE 137

ADIANTUM REFRACTUM Christ

POLYPODIACEÆ

ADIANTUM REFRACTUM Christ, Bull. Acad. Géogr. Bot. (1902) 224; ibid. (1906) 136; C. Chr. Ind. Fil. 32 (1905); Acta Hort. Gothob. **1**: 93 (1924).

Adiantum capillus-veneris Diels (non. L.) in Engl. Jahrb. **29**: 202 (1900).

Adiantum capillus-veneris var. *sinuatum* Christ, Bull. Soc. Bot. France **52**: Mém. 1. 62 (1905); C. Chr. Acta Hort. Gothob. **1**: 93 (1924).

Rhizome short, oblique, densely clothed at apex in rufo-brown, ovate-acuminate, entire *scales*; *fronds* cæspitose, stipe 10-25 cm long, glossy, ebeneous, naked, lamina deltoid-ovate, 20-30 cm long, nearly as broad, tripinnate; *pinnæ* 5-8-jugate, alternate, with zigzag rachis, all long-petiolate, basal ones much the largest, oblong-ovate, 10-15 cm long, 4-6 cm broad; *pinnules* 6-7-jugate, petiolate, alternate, the lower ones pinnate, upper ones 2-3-foliolulate, the uppermost ones simple, rachilets also strongly flexuose; *pinnules* of ultimate order 1-1.5 cm each way, flabellate with sinuate or 2-3-incised outer margin, petiolulate; *lobes* entire with deeply incurvate outer edge; *texture* membranaceous, green; *veins* fine, flabellulately forked; *sori* one to each lobe, to 8 mm long, *indusium* more more or less curved, brown, persistent.

Szechwan occid: *Wilson 5259* (type); Nanchuan, *Rosthorn 954*; ibid. *W. P. Fang 5708*; between Haiting and Ping-yi-pu, *Harry Smith 1753, 1972*; Tchen-kou-tin, *Farges 730*; Kuan Hsien, *W. P. Fang 2357*. Kweichow: Gan-pin, *Cavalerie 3725*; *Bodinier 1840*. Yunnan: environs de Yunnan-sen, *Ducloux*.

This distinct Maiden-hair fern native of West China is closely related to *A. capillus-veneris* L. from which it differs in tufted leaves, zigzag rachis and rachilets, much less divided ultimate pinnules and much longer sori and indusium.

Plate 137. Fig. 1. Habit sketch (natural size). 2. Pinnule (× 4). 3-4. Scales from rhizome (× 14).

第一百三十七圖

蜀鐵線蕨(水龍骨科)

ADIANTUM REFRACTUM Christ

地下莖短而斜出，端具紅褐色之卵形漸尖頭鱗片；葉簇生，柄長十至二十五粉，光亮，烏木色，光滑，葉體卵狀三角形，長二十至三十粉，寬幾如之，三回羽狀分裂，一回小葉五至八對，互生，具柄，各位中肋呈強度曲折，基部一對最大，橢圓卵形，長十至十五粉，寬四至六粉，二回小葉六至七對，具柄，互生，位於下部者，羽狀分裂，上部者二至三裂，最上者不分裂；末回小葉長寬約各一至一·五粉，略呈扇形，頂端呈波形或二至三淺裂，具短柄，裂片無鋸齒，向下凹，葉爲薄紙質或厚膜質，光綠色，葉脈扇狀分叉；子囊羣長達八粁，每裂片一個，蓋同形，向上灣曲，褐色，宿存。

分布： 四川，貴州及雲南。

本種爲我國西部特產，極爲美觀，其異於普通習見之鐵線蕨(Ad. capillus-veneris Linn.)者，爲其簇生之葉，強度曲折之各位中肋，末回小葉僅具二至三個淺裂片與其較長之子羣蓋是也。

圖註： 1. 本種全形(自然大)， 2. 末回小葉(放大四倍)， 3-4. 地下莖端之鱗片(放大十四倍)。

ADIANTUM REFRACTUM Christ

蜀鐵線蕨

C. R. Feng Del. et Lith.

PLATE 138

ADIANTUM DAVIDI Franchet

POLYPODIACEÆ

ADIANTUM DAVIDI Franchet, Nouv. Arch. Mus. II. **10:** 112 (1887); Diels in Engl. u. Prantl: Nat. Pflanzenfam. **1**: 4. 284 (1899); Christ, Bull. Soc. Bot. France **52**: Mém. 1. 62 (1905); Bull. Acad. Géogr. Bot. (1906) **136**; C. Chr. Ind. Fil. 25 (1905); Acta Hort. Gothob. **1**: 94 (1924); Contr. U. S. Nat. Herb. **26**: 310 (1931).

Adiantum aristatum Christ, Bot. Gaz. **51**: 345 (1911): C. Chr. Ind. Fil. Suppl. I. 4 (1912); Bot. Gaz. **56**: 331 (1913).
Adiantum Davidi var. *aristatum* C. Chr. Acta Hort. Gothob. **1**: 94 (1924).
Adiantum monochlamys var. *latedeltoideum* Christ, Nuov. Giorn. Bot. Soc. Ital. n.s. **4**: 88 (1897).
Adiantum latedeltoideum C. Chr. Acta Hort. Gothob. **1**: 94 (1924).
Adiantum venustum Christ, (non Don) Bull. Soc. Bot. France **52**: Mém. 1. 62 (1905).
Adiantum monochlamys C. Chr. Bot. Gaz. **56**: 331 (1913).

Rhizome wiry, wide-creeping, densely scaly at growing tip; *scales* nitide, atro-brown, ovate-lanceolate, entire; *frond* far apart, stipe slender, firm, terete, glossy, castaneous, 10-20 cm long, glabrous above the scaly base, lamina deltoid-ovate, much shorter than stipe, tripinnate; *pinnæ* 3-5-jugate under elongate pinnatifid apex, all petiolate, basal ones much the largest, deltoid-lanceolate, to 7 cm long, 3-4 cm broad; *pinnules* oblong, petiolulate, obtuse, with 1-4 pairs of ultimate close pinnules which are of flabellate shape with rounded, aristately serrate outer margin, distinctly petiolulate, 4-7 mm each way, rachis, rachilets, costa and petiolules shining castaneous; *texture* crass herbaceous, surfaces glabrous, green above, more or less glaucous underneath; *veins* fine, flabellately forked, more or less projecting out from the sharp teeth; *sori* medium-sized, generally solitary to each ultimate pinnule, *indusium* brown, thick, rotundo-reniform, 2-3 mm long, with the sterile margin on both sides aristately serrate.

Szechwan: Moupin, *David* (type) (1870); Tchen-kou-tin, *Farges 689*; Yen-guen, *Handel-Mazzetti 2789*; *Wilson 5254* (type of *A. aristatum*); Mo Tien Ling, *F. T. Wang 22453*; Teng-hsiang-ying, *Harry Smith 1918*; Drogochi, *Harry Smith 4548*. Yunnan: The Red River, Mo-so-yu, *Delavay 1698*; Hokin, *Delavay 1198*; Lonkong, Yen-tze-hay, *Delavay 1878, 1687*; Teng Kou valley, *Forrest 12483*; Yung-peh Mt., *Forrest 17049*; *Ducloux 3368*. Shensi: Lun-san Huo, *Giraldi*, Oct. 1895; Miao-nan Shan, *Giraldi*, Jan. 1899; Thai-pei Shan, *Giraldi* August, 1893; August 10-20, 1894 & 1895; *Purdom 79 78*; ibid., Hopingsze, *K. S. Hao 4272*, Sept. 12, 1932. Tibet Border: *Capt. Kingdon Ward 479* (1913).

Burma: Simila, Burhe 23 (1867).

This distinct endemic species belongs to the group of *A. venustum* Don of Northern India. The underside of leaves sometimes appears conspicuously glaucous, or sometimes only bluish as in *A. aristatum*. *A. latedeltoideum* C. Chr. from the southern part of Shensi is only a somewhat ampler form; and most specimens from the same region have ultimate pinnules rolled up, due evidently to the dry habitat.

Plate 138. Fig. 1. Habit sketch (natural size). 2. Pinnule (× 8). 3-4. Scales from rhizome (× 25).

第一百三十八圖

白背鐵線蕨(水龍骨科)

ADIANTUM DAVIDI Franchet

地下莖細長蔓生，橫行，具深棲色光亮之卵披針形鱗片；葉散生，柄細長而堅實，橫切面圓形，具光澤，呈栗色，長十至二十粉，惟基部略具鱗片，餘皆光滑，葉體卵三角形，長漸尖頭，較柄短，三回羽狀分裂，一回小葉三至五對，均具柄，基部一對最大，三角披針形，長達七粉，寬三至四粉，二回小葉橢圓形，具短柄，鈍頭，羽狀分裂，末回小葉密接，扇形，長寬各四至七糎，上部葉緣具開展刺狀鋸齒，葉脈扇形分叉，各位中肋呈光亮之栗色，葉上面綠色，下面呈灰白或灰綠色，子囊羣中大，通常每一小葉具一個，蓋爲圓腎形，黃色，厚膜質，長二至三糎，兩側葉緣具刺狀鋸齒。

分布： 四川，雲南，陝西南部及西藏東部；緬甸亦產之，惟極罕見耳。

本種爲本屬特殊之一種，其末回小葉彼此密邇或多小鱗覆，背現灰白色，至爲美觀。

圖註： 1. 本種全形(自然大) 2. 末回小葉(放大八倍)， 3-4. 地下莖上之鱗片(放大二十五倍)。

ADIANTUM DAVIDI Franchet

白背鐵線蕨

C. R. Feng Del. et Lith.

PLATE 139

ADIANTUM EDGEWORTHII Hooker

POLYPODIACEÆ

ADIANTUM EDGEWORTHII Hooker, Sp. Fil. **2**: 14 t. 81B (1851); Syn. Fil. 472 (1867); Fée, Gen. Fil. 114 (1852); Moore, Ind. Fil. 25 (1857); Bedd. Ferns Brit. Ind. t. 17 (1865); J. Sm. Hist. Fil. 274 (1875); Christ, Bull. Soc. Bot. France **52**: Mém. 1. 61 (1905); Bull. Acad. Géogr. Bot. (1906) 136; ibid. (1910) 12; C. Chr. Ind. Fil. 26 (1905); Suppl. III. 19 (1934); Acta Hort. Gothob. **1**: 47 (1924); Contr. U. S. Nat. Herb. **26**: 310 (1931).

Adiantum caudatum var. *Edgeworthii* Bedd. Handb. Ferns, Brit. Ind. etc. 84 (1883).

Adiantum caudatum var. *rhizophyllum* (Wall) Clarke, Trans. Linn. Soc. II. Bot. **1**: 453 (1880), non *Ad. rhizophyllum* Sw.

Adiantum Guilelmi Hance, Journ. Bot. **5**: 261 (1867).

Adiantum Spencerianum Cop. Phil. Journ. Sci. **1**: Suppl. II. 154 t. 11 (1906); C. Chr. Ind. Fil. Suppl. I. 4 (1912).

Rhizome short, erect, sparcely scaly at apex; *scales* black, lanceolate, subulate towards tip, rigid; *fronds* fasciculated, several together, stipe terete, glossy, castaneous, 10-18 cm long, wiry but firm, glabrous above scaly base, lamina linear-lanceolate, 10-23 cm long, 2-2.5 cm broad; *pinnæ* 10-40-jugate, patent, basal ones somewhat smaller, deflexed, uppermost ones gradually diminished towards apex, which is sometimes elongate and rooting, all shortly petiolate, dimidiate, variable in size, apex rounded, anterior inner base truncate, margin more or less lobato-incised, in sterile ones cut nearly half way down into 3-5 oblong, roundish or bifid segments on the outer margin; *texture* thin herbaceous, glabrous in all parts; *veins* fine, flabellately forked; *sori* several to each pinna, *indusium* laterally oblong or subreniform, brown, glabrous.

Yunnan: San-tchang-kisu, Hokin, *Delavay 1714*; Chouany-che-tesu near Ta-pin-tze, *Delavay 7*; Ma-eul-shan, *Delavay 1189*; Mekong, *Handel-Mazzetti 8508* (1914-18); *Maire 1390, 2736*; *Forrest 10787*; Mengtze, *Hancock*; Szemeo, *Henry 12821*; Tali, Mo-che-tchin, *Delavay 1200*; *Schneider 2791*; *Ducloux 13, 171 1886*; *Cavalerie 1918, 1903, 1570, 4715, 7070*; environs de Yunnan-sen, *Ducloux 5*; environes de Tengyueh, *J. F. Rock 7970*. Szechwan: *Wilson 526, 5258*; Mt. Ying Shan-luan, *W. Fernusson* (1910); Yien-pien Hsien, *T. T. Yü 1688*; Nin-yuan Hsien, Lu-shan, *Harry Smith 1797*. Kweichow: Kiang-long, *Michel 994*. Shantung: Tai-shan, *Clemens 1307* (1912); *Jacob 20*. Hopei: Peiping mountains, *Hancock*, Sept. 26, 1875; *S. W. Williams 13483* in herb. Hance; *Bushell*; *Bretschneider 77*; *W. R. Carles 235*; *C. L 206* in herb. Tsin-Hua Univ.; Changli, *Mrs. Clemens 6022, 6022B*, June 28, 1913; Mia Fan Shan, *C. T. Li 32178*, July 17, 1932; Hsing-lung Shan, *T. N. Liou*, Sept. 15, 1930.

Formosa: *Hancock 113.*

Indo-China: Hermera, *F. Neuton 1080.*

N. W. India: Luni valley, alt. 5,000 ft., *Edgeworth* (type), common.

Also the Philippines.

This pretty distinct fern belongs to the group of *A. caudatum* L. with which it has not infrequently been confounded, and from which it differs in much less divided pinnæ and naked leaves. Very variable in size and dimension of pinnæ; Specimens from North China are generally of smaller size in every repect.

Plate 139. Fig. 1. Habit sketch (natural size). 2. The same, a smaller form (natural size). 3. Pinna (× 5). 4. Scales from rhizome (× 24).

第一百三十九圖

愛氏鐵線蕨(水龍骨科)

ADIANTUM EDGEWORTHII Hooker

地下莖短而直立，端部具黑色狹披針形之疏鱗片；葉簇生，柄細長，圓形，光亮，紅栗色，長十至十八粉，惟基部略具鱗片，葉體線披針形，長十至二十三粉，寬二至二·五粉，一回羽狀分裂，其端常延長入土著根；小葉十至四十對，開張，橢圓三角形，基部不等，長一至二粉，基部數對較小，下向，均具短柄，外緣呈多少淺裂，兩面光滑，紙質；葉脈扇形分叉；子囊羣每小葉數個，蓋橢圓形，或亞腎形，黃色，光滑。

分布： 雲南，四川，貴州，山東，河北；台灣，交趾，印度北部及菲列濱亦產之。

本種形體極類我國南部所產之 Ad, caudatum Linn. 所不同者，爲其葉體不具剛毛，小葉外緣僅呈淺裂是也。

圖註： 1. 本種全形(自然大)， 2. 同上，小形(自然大)， 3. 小葉(放大五倍)， 4. 地下莖上之鱗片（放大二十四倍）。

ADIANTUM EDGEWORTHII Hooker

愛氏鐵線蕨

C. R. Feng Del. et Lith.

PLATE 140

PTERIS FAURIEI Hieronymus

POLYPODIACEÆ

PTERIS FAURIEI Hieronymus, Hedwigia **55**: 345 (1914); C. Chr. Ind Fil. Suppl. II. 30 (1916).

Pteris quadriaurita Hk. Sp. Fil. **2**: 179 (1852); Syn. Fil. 158 (1867); Diels in Engl. u. Prantl: Nat. Pflanzenfam. **1**: 4. 292 (1899), pro parte.

Pteris quadriaurita Franch. et Sav. (non Retz.) Enum. Pl. Jap. **2**: 214 (1877); Christ in Warburg, Monsunia **1**: 69 (1900); Bull. Herb. Boiss. IV. **2**: 612 (1904); Journ. d. Bot. France **19**: 14 (1905); Bull. Acad. Géogr. Bot. (1910) 16; C. Chr. Acta Hort. Gothob. **1**: 97 (1924).

Pteris biaurita C. Chr. Ind. Fil. 593 (1905). pro parte.

Pteris longipinnula Christ (non Wall. 1828), Bull. Acad. Géogr. Bot. (1906) 130; ibid., (1910) 16.

Rhizome short, oblique, densely scaly; *scales* dark brown, lanceolate, rigid, appressed; *fronds* subcæspitose, stipe 30-40 cm long, rufo-straminous on the lower part, lighter-colored upwards, glabrous above the base, lamina broadly ovate-deltoid, 30-45 cm long, nearly as broad; *pinnæ* 4-7-jugate under the free end-pinna, generally larger than those immediately below, the basal ones much the largest, deltoid, with 1-3 additional pinnules on the lower side of costa, all subsessile with shortly decurrent base, the middle ones 15-20 cm long, 4.5-6 cm broad, pinnatifid nearly down to costa into 20-30 pairs of linear-subfalcate, obtuse segments under the caudate, entire apex 2-4 cm long; *segments* 2.5-4 cm long, less than 1 cm broad at base with 13-17 pairs of biforked and very prominent *veins*, of which the posterior basal one springing from costa and 2-3-4-forked, the anterior basal one, from the costule of segment, biforked, with veinlets running to the margin some distance above the sharp, callous sinus; *texture* chartaceous, clear light green, glabrous on both sides, except a few brownish, thick, articulated hairs underneath, costa pale-colored, terete below, deeply sulcate and with one stout spine at the base of costule of segment above; *sori* continuous from near the sinus up to a short way from the sterile entire apex of segment, *indusium* membranaceous, gray, entire.

Numerous specimens have been seen from Kwangtung, Islands Hongkong and Hainan, Fukien, Chekiang, Hupeh, Yunnan, Szechwan and Kwangsi, besides Formosa, Japan, French Indo-China. A complete enumeration will appear later in my "Studies of Chinese Ferns."

The present species has previously been generally considered the same as *Pteris quadriaurita* Retz. from Ceylon, the type of which, I had a chance to examine some years ago, is very different from our fern in general habit, but perfectly identical with *Pteris otaria* Bedd. Ferns S. Ind. t. 41, 219. Our plate is based upon a specimen from Kwangtung (leg. Y. K. Wang No. 31655) and represents what Hieronymus has considered var. *rigida*, l.c. p. 346., a form, common in South China, which differs, according to its author, from the Formosan type (leg. Faurie No. 628) in clear light green leaves and more prominently raised veinlets on both sides; but ample material from the region has convinced me that a varietal name is hardly justified. It is possible, however, that some specimens from Szechwan and Kweichow which have more pairs of lateral pinnæ with much longer, linear caudate apices, may prove specifically distinct from the form from South China.

Plate 140. Fig. 1. Habit sketch (natural size). 2. Two segments, showing venation and sori (× 4). 3. A portion of pinna, showing the stout spines at the base of costules above (× 2).

第一百四十圖

傅氏鳳尾蕨(水龍骨科)

PTERIS FAURIEI Hieronymus

地下莖短而斜出，端具深棱色厚質披針形之密鱗片；葉亞簇生，柄長三十至四十粉，下部呈紅稻桿色，上部爲淡稻桿色，光滑，葉體闊卵三角形，長三十至四十五粉，寬亦如之，二位奇數羽狀分裂，小葉四至七對，幾無柄，基部一對最大，中肋下面具一至三數小葉，中部一回小葉長十五至二十粉，寬四·五至六粉，中肋上面具肉刺，綠色，厚紙質，光滑，羽狀深裂達於中肋，頂端呈尾形；裂片二十至三十對，長二·五至四粉，寬不及一粉，線狀亞鐮形，全緣，鈍頭，葉脈十三至十七對，顯明，二叉，其基部下方之脈着生於一回小葉之中肋，三至四叉；子囊羣線形，貼近葉緣，幾達葉頂，蓋線形，寬約一糎，膜質，灰白色，全緣。

分布： 廣東，香港，瓊洲島，福建，浙江，湖北，雲南，四川，廣西；日本，台灣及交趾亦產之。

本種爲本區內習見之品，昔人誤認爲與錫蘭所產之 Pt. quadriaurita Retz. 同種，實則二者大相逕庭。

圖註： 1. 本種全形(自然大)， 2. 兩裂片，表示及葉脈及子囊羣之位置(放大四倍)， 3. 小葉之一部，表示其中肋上面之肉刺(放大二倍)。

1

2

3

PTERIS FAURIEI Hieronymus

傅 氏 鳳 尾 蕨

PLATE 141

PTERIS DACTYLINA Hooker

POLYPODIACEÆ

PTERIS DACTYLINA Hooker, Sp. Fil. **2:** 160 t. 130A (1858); Syn. Fil. 155 (1867); Baker, Journ. Bot. (1888) **226**; Diels in Engl. u. Prantl: Nat. Pflanzenfam. **1:** 4. 292 (1899); Christ, Bull. Acad. Géogr. Bot. (1906) 130; C. Chr. Ind. Fil. 596 (1905); Acta Hort. Gothob. **1:** 96 (1924); Contr. U. S. Nat. Herb. **26:** 311 (1931); Hand-Mzt. Symb. Sin. **6:** 40 (1929); Clarke, Trans. Linn. Soc. II. Bot. **1:** 463 (1880); Bedd. Ferns Brit. Ind. t. 23 (1865); Handb. Ferns, Brit. Ind. etc. 107 (1883).

Rhizome short-creeping, matted, glabrous except a few subulate, rufo-brown *scales* at growing tips; *fronds* numerous, tufted, stipe 15-30 cm long, slender, wiry, glossy, pale straminous, perfect glabrous throughout, shaded dark brown in the lower part, lamina digitate, consisting of 5-7, or rarely 3 linear elongate *pinnæ* 5-10 cm long, 5-7 mm broad with deeply sulcate costa above, the barren ones sharply serrate towards apices; *veins* widely apart, distinct, simple or bifurcate, veinlets rather patent, ended in a distinct clavate hydathode some distance below the base of tooth; *indusium* gray, broad, continuous. subentire, persistent.

Yunnan: Schilungba, *Handle-Mazzetti 275*; *Forrest 287, 5983, 12445, 28569*, Likiang, *Schneider 2969*; *Delavay 1720*, August, 7, 1883; *J. F. Rock 4854*. Kansu: *F. N. Meyer 20106*. Szechwan: Mt. Omei, *Faber 1010*; *Wilson 5274*; Teng-hsiang-ying, *Harry Smith 1993*; between Hai-tang and Ping-yi-pu, *Harry Smith* 1942. Tibet: Muti, *Capt. Kingdon Ward 4773*.

Also Sikkim-Himalayas, common

Type from Sikkim (leg. Drs. Hooker & Thomson). One of the most remarkably graceful slender fern of the group of *Pteris cretica* L. and is closely related to *P. stenophylla* Wall., differs in generally 5-7 much narrower pinnæ on very wiry slender stipe and in its densely tufted leaves. As already pointed out by Hooker (Sp. Fil. **2:** 161), the frond of this fern is not strictly digitately dissected but is constructed on the same plane as is *P. cretica*, except the petiole of the central pinna is either totally suppressed or arrested from lengthening out as in the other species.

Plate 141. Fig. 1. Habit sketch (natural size). 2. Portion of fertile pinna (× 8). 3. Portion of sterile pinna (× 10).

第一百四十一圖

掌鳳尾蕨(水龍骨科)

PTERIS DACTYLINA Hooker

地下莖亞蔓生，交錯，光滑，僅端具紅褐色狹針形之疏鱗片；葉多數密生，柄長十五至三十粉，細長而質軟，淡稻桿色，有光澤，全體光滑，基部呈深褐色，葉體圓卵形，掌狀分裂，小葉五至七數，間爲三數，線形，長五至十粉，寬五至七糎，幾無柄，光綠色，中脈上面具溝槽，側脈疏生，單一或二叉，達於葉緣銳鋸齒之基部，非子囊羣小葉及不生子囊羣之部分之葉緣具鋸齒；子囊羣蓋膜質，灰白色亞全緣，通直，宿存。

分布： 雲南，四川，西藏，及印度北部之高山。

本種具秀雅之形體，至爲美觀，本屬特殊品種之一也。

圖註： 1. 本種全形(自然大)， 2. 子囊羣葉之一部(放大八倍)， 3. 非子囊羣葉之一部(放大十倍)。

PTERIS DACTYLINA Hooker

掌 鳳 尾 蕨

PLATE 142

SCHIZOLOMA ENSIFOLIUM (Sw.) J. Smith

POLYPODIACEÆ

SCHIZOLOMA ENSIFOLIUM (Sw.) J. Smith, Journ. Bot. **3**: 414 (1841); Ferns Brit. & Fore. 231 (1846); Hist Fil. 271 (1875); Fée, Gen. Fil. 108 (1850-52); Bedd. Ferns S. Ind. t. 25 (1863); Handb. Ferns, Brit. Ind. etc. 80 (1883); Diels in Engl. u. Prantl: Nat. Pflanzenfam. **1**: 4. 219 (1899); C. Chr. Ind. Fil. 618 (1905); v.A.v.R. Handb. Mal. Ferns 280 (1909).

Lindsaea ensifolia Sw. in Schrad. Journ. Bot. **1800**[2]: 77 (1801); Syn. Fil. 118 (1806); Willd. Sp. Pl. **5**: 420 (1810); Hk. et Grev. Ic. Fil. t. 3 (1827); Hk. Sp. Fil. **1**: 220 (1844); Gard. Ferns t. 62 (1840); Journ. Bot. (1857) 336; Syn. Fil. 112 (1867); Christ, Farnkr. d. Erde 297 (1897); Benth. Fl. Hongk. 446 (1861); Clarke, Trans. Linn. Soc. II. Bot. **1**: 452 (1880).

Lindsaya lanceolata Labill. Pl. Nov. Holl. **2**: 98 t. 248. f. 1 (1806), *folia simplex*.

Lindsaya pentaphylla Hk. Sp. Fil. **1**: 219 t. 67 (1844).

Lindsaya Griffithiana Hk. Sp. Fil. **1**: 219 t. 68B (1844); Bedd. Ferns Brit. Ind. t. 29 (1867), *folia simplex*.

Rhizome short-creeping, densely scaly; *scales* brown, lanceolate-subulate, entire; *frond* rather approximate, stipe 6-20 cm long, light castaneous, somewhat glossy, naked throughout, lamina 15-25 cm long, impari-pinnate or rarely simple (*Lindsaya Griffithiana*); *pinnæ* 1-12-jugate, petiolate or subsessile, alternate, 6-13 cm long, from less than 1 cm to 2 cm broad, linear-lanceolate, base obliquely truncate, both sides glabrous; *texture* thin herbaceous, margin entire (sterile ones serrate); *midrib* prominent, lateral main veins none; *veins* anastomosing in 1-2 rows of oblique, angular exappendiculate areolæ on each side of midrib, free towards margin; *sori* linear, continuous, uniting the apices of free veinlets, *indusium* double, membranaceous, gray, entire, continuous, opening outwardly; *spores* 4-angular, transluscent.

Hongkong; *Fortune 7, 27* (1848); *Faurie 15772* (1895); *C. Wright* (1853-56); *Bodinier 887*; *Lorain* (1856), pro parte; *Harland 63*; *Gower 2* (1896); *Matthew 304* (1904); Koolung, *C. T. Yong 291* in herb. Tsin -Hua Univ.; *Gardner, Dill.* Kwangtung: Swatow, *Dalziel*, Sept. 1901; Lohfau Shan, *C. Ford* (1883); *N. K. Chun 40990*. Hainan: Hoichow, *Hancock 1* (1875); Dung Ka to Win Fa Shi, *C. L. Tso & N. K. Chun 43728*.

Widely distributed throughout tropical Asia, Australia and Polynesia. Very closely related to this fern is *Sch. heterophyllum* (Dry.), which differs in the lateral pinnæ gradually decrescent towards the lobato-pinnatifid apex. Our fern is a very variable one as to the shape of frond, which varies from simple to fully pinnate with 10 pairs of pinnæ of different width. Our plate is based upon a specimen from Kwangtung (leg. N. K. Chun 40990), which agrees very well with type from Island Maritius, now to be found in the herb. Swartz.

Plate 142. Fig. 1. Habit sketch (natural size). 2. Portion of pinna (× 6). 3. The same, with open indusium (× 6). 4. Spores (× 500). 5. Scale from rhizome (× 10).

第一百四十二圖

擬鳳尾蕨(水龍骨科)

SCHIZOLOMA ENSIFOLIUM (Sw.) J. Smith

地下莖亞蔓生，具棲色狹披針形之密鱗片；葉近生，柄長六至二十粉，淡栗色，稍具光澤，光滑，葉體長十五至二十五粉，橢圓形，奇數一回羽狀分裂，間爲線披針形之單葉；小葉一至十二對，具短柄或幾無柄，互生，長六至十三粉，寬一至二粉或較狹，線披針形，基部斜截形，兩面光滑，紙質，全緣（非子囊羣葉具鋸齒）；主脈明顯，側脈無，小脈網狀，網眼一至二列，斜出，內不具小脈，向葉邊分離；子囊羣貼近葉緣，線形，蓋兩層，膜質，全緣，通直，向外開。

分布： 廣佈於亞洲熱帶及澳洲，我國之香港，廣東，瓊洲島亦產之。

本種酷似 Sch. heteropyllum (Dry.), 所不同者，爲其小葉成奇數，向葉端不漸縮小是也。

圖註： 1. 本種全形（自然大）， 2. 小葉之一部（放大六倍）， 3. 同上，具展開之雙子囊羣蓋（放大六倍）， 4. 胞子(放大五百倍)， 5. 地下莖上之鱗片（放大十倍）。

SCHIZOLOMA ENSIFOLIUM (Sw.) J. Smith

擬 鳳 尾 蕨

C. R. Feng Del. et Lith.

PLATE 143

CONIOGRAMME INTERMEDIA Hieronymus

POLYPODIACEÆ

CONIOGRAMME INTERMEDIA Hieronymus, Hedwigia **67:** 301 (1916): C. Chr. Ind. Fil. Suppl. II. 9 (1916); Contr. U. S. Nat. Herb. **26:** 307 (1931); Wu, Bull. Dept. Biol. Sun Yatsen Univ. No. **3:** 212 t. 97 (1932).

Coniogramme javanica Hk. Sp. Fil. **5**: 145 (1863); Syn. Fil. 381 (1867), pro parte.

Coniogramme fraxinea Diels in Engl. u. Prantl: Nat. Pflanzenfam. **1**: 4. 262 (1899); C. Chr. Ind. Fil. 185 (1905), pro parte; Christ in Warburg, Monsunia **1**: 58 (1900); Fedde, Repert. Sp. Nov. **5**: 159 (1908); Bull. Acad. Géogr. Bot (1910) 5, 14; Komarov, Fl. Mansh. **1**: 140 (1900); Fomin, Fl. Sib. et Orient. Extr. **5**: 155 (1930); Ogata, Ic. Fil. Jap. **3**: t. 111 (1930), non Diels, pro parte.

Gymnogramme javanica Christ, Bull. Acad. Géogr. Bot. (1906) 130.

Rhizome wide-creeping, densely scaly; *scales* brown, lanceolate, acuminate, subentire; *frond* far apart, stipe 20-40 cm long, glabrous, pale straminous, terete below, broadly grooved above, lamina ovate-deltoid, 40-60 cm long, 30-45 cm broad, bipinnate at base, simple pinnate upwards under the free end-pinna, or rarely simple pinnate; *lateral pinnæ* 3-10-jugate, alternate, the basal ones much the largest, opposite and long-petiolate (petiole to 2 cm long), over 20 cm long, generally trifoliolate or rarely pinnate, the upper ones simple or rarely the second pinnæ trifoliolate or bilobed, petiolate or rarely the uppermost ones sessile or adnate, 30-15 cm long, 4-3 cm broad, broadly lanceolate, with caudate or attenuate apex, base rounded or rotundo-cuneate, margin sharply serrate; *texture* herbaceous, color light green, both sides naked or sparcely villose, rachis naked, glossy, pale straminous; *veins* free, distinct, oblique, generally biforked from near the base, veinlets fine, straight, parallel, extending till the base of teeth or well into the teeth and ended in an elongate clavate apex; *sori* pale brown, exindusiate, following veins and veinlets till a short distance from the margin, which remains sterile with the apex.

Var. **glabra** Ching, var. nov. Pinnis subtus glabris.

Yunnan: Mengtze, *Hancock 135;* Manmei, *Henry 9257B; Maire 2773, 2808, 2768; Delavay 4942;* Mekong, valley, *Forrest 12940;* San Tcha Ho, *Delavay* Oct. 13, 1887; Mao Kou Tchang, *Ducloux 13, 1169;* Likiang, *J. F. Rock 7757;* Tchen-fong Shan, *Delavay 3043* (1894). Kweichow: Pin-fa, *Cavalerie 324;* Ganchow, *Michel 1044;* Cheng-feng, *Y. Tsiang 4603.* Hupeh: Ichang, Nanto, *Henry 2204;* Koi Hsien, *Silvestri 34, 33, 2839* (1909); Shin Shan Hsien, *S. S. Chien 8103* in herb. Univ. Nanking. Szechwan: Mt. Omei, *Wilson 5245; Brown 11, 31; W. P. Fang 2707, 2575, 2576, 2605, 2548;* Nanchuan, *W. P. Fang 5738.* Hunan: Yun-Shan, *Handel-Mazzetti 12250.* Kwangtung: Lohfau Shan, *Levine & McClure 6831; Levine 1485;* Lokchong, *W. T. Tsang 20955.* Shensi: Tui-kio-san, *Giraldi,* Sept. 1893; Si-ku-tziu-san, *Giraldi,* July, 1894; Wei-tze-ping, *Licent 2545* (1916). Kwangsi: Yao Shan, *S. S. Sin 468* (1928); Tsin-lung Shan, Lin-yin Hsien, *R. C. Ching 6882;* Lu-chen, *R. C. Ching 5745.* Manchuria: Kirin, *Komarov 40* (1896); *James* (1886).

Corea: *Taquet 2474, 2475.* Also Japan, Tonkin and East India.

Var. **villosa** Ching, var. nov. Pinnis subtus plus minus pilis tenuisissimis, adpressis, articulatis onustis.

Yunnan: Mengtze, *Hancock 22;* Salwin valley, *Capt. Kingdon Ward,* Jan. 2, 1914; *Maire 2786;* Tian-chong Shan, Tali, *K. K. Tsoong 2589.* Szechwan: *Henry 7107;* Mt. Omei, *W. P. Fang 2697, 2064;* Mar-pien Hsien, *W. P. Fang 6331; T. F. Lou 342;* Kuan Hsien, *W. P. Fang 2064.* Kwangtung: Lohfau Shan, *E. Faber,* Sept. 22, 1886, herb. Hance; Lokchong, *C. L. Tso 21067; W. T. Tsang 20892.* Kweichow: Pin-fa, Kweiting, *Y. Tsiang 5350.*

Also Japan and India.

Our plate represents the var. *glabra* from Mt. Omei (leg. W. P. Fang No. 2548). Hieronymus is right in separating the Chinese and Japanese plants as distinct from true *C. fraxinea* (Don) from the Himalayas and Malesia-Polynesia, which is characterized by entire pinnae of still larger size and much thicker texture, but I can not agree with him in regarding Rosthorn's plant No. 1699 from Nanchuan and Henry's No. 2204 from Ichang *(C. Rosthornii)* as specifically distinct from var. *villosa* of the present species by merely having "shorter, stiff and easily broken hairs, consisting of 2-4 cells" on the underside of pinnae, a character which seems to be too insignificent to justify a specific rank.

Plate 143. Fig. 1. Habit sketch (natural size). 2. Portion of pinna, showing serration and extension of veinlets (× 12). 3. Scale from rhizome (× 12).

第一百四十三圖

華鳳了蕨(水龍骨科)

CONIOGRAMME INTERMEDIA Hieronymus

地下莖蔓生，橫行，具棲色披針形之鱗片；葉散生，柄長二十至四十粉，光滑，淡稻桿色，上面具闊溝槽，葉體卵三角形，長四十至六十粉，寬三十至四十五粉，奇數二回羽狀分裂，一回小葉三至十對，互生，具柄，基部一對最大，對生，柄長達二粉，長逾二十粉，通常具小葉或爲羽狀分裂，二回小葉披針形，長三十至十五粉，寬四至三粉，頂部尾形或長漸尖頭，上部一回小葉不分裂，或第二對爲三裂，葉緣具密尖鋸齒，兩面光滑或下面被短疏毛，薄紙質，淡綠色；葉脈明顯，斜出，自基部分二叉，平行，達於鋸齒之基部或深入，子囊羣淡黃色，線形，隨葉脈分佈，直達距葉邊近處，無蓋。

分佈： 雲南，貴州，湖北，四川，廣東，廣西，東三省；日本，朝鮮及印度東部亦產之。

本種爲本區域內普通之種，因其葉體下面有無短毛可分爲光葉(Var. glabra)與毛葉 (Var. villosa)兩變種。

圖註： 1. 本種全形(自然大)， 2. 小葉之一部，表示其鋸齒及葉脈(放大十二倍)， 3. 地下莖上之鱗片(放大十二倍)。

CONIOGRAMME INTERMEDIA Hieronymus

華鳳了蕨

C. R. Feng Del. et Lith.

PLATE 144

VITTARIA FORRESTIANA Ching

POLYPODIACEÆ

VITTARIA FORRESTIANA Ching, Sinensia **2**: 191 f. 6 (1931); C. Chr. Ind. Fil. Suppl. III. 194 (1934).

Vittaria Doniana C. Chr. (non Hieron. 1915), Contr. U. S. Nat. Herb. **26**: 313 (1931).

Rhizome thick, creeping, densely scaly; *scales* fusco-brown, iridescent, lanceolate with hair-pointed tip, distinctly reticulated; *frond* rather far apart, 30-35 cm long, 1.5-2.5 cm broad at the broadest part, oblanceolate, acuminate, from one-third from the apex gradually narrowed and broadly decurrent along the stipe till base; *texture* fleshy in living state, coriaceous upon drying, midrib indistinct above, broad and prominent underneath; *venation* distinct against light, lateral veins fine, very oblique, regularly jointed each other towards margin; *sori* superficial, intramarginal, leaving a broad, comparatively thin, plane sterile margin, *paraphyses*, filiform, with enlarged, cup-shaped apical cell.

Yunnan: Salwin divide, *G. Forrest 18347, 35106,* Sept. **1924**; Northern Maikha-Salwin divide, *G. Forrest 27062*, July, **1925**, on tree of dry rocks in mixed forest, 1,0100 ft. alt.

Burma: Between Sadon and the Yunnan border, *J. F. Rock 7423, 7496, 7398.*

Tonkin: Chapa, *Pételot 1598, 3901.*

In gross habit, our fern resembles *V. scolopendria* Thwaites from Malesia-Polynesia, but differs above all in its superficial sori; it also closely related to *V. Doniana* Hieron. of East India, which differs in much narrower and linear elongate leaves twice as long with thick and strongly reflexed margin.

Plate 144. Fig. 1-2. Habit sketch (natural size). 3. Portion of frond, showing venation and position of sori (× 2). 4. Scale from rhizome (× 12). 5. Paraphyses from sorus (× 100).

第一百四十四圖

寬書帶蕨(水龍骨科)

VITTARIA FORRESTIANA Ching

地下莖頗肥，蔓生，具褐棲色且富曲光性之膜質披針形大鱗片；葉頗散生，長三十至三十五粉，寬一·五至二·五粉，倒披針形，漸尖頭，無柄，薄肉質，向基部漸狹，兩面光滑，中肋上面明顯，側脈在光下可見，斜出，達葉緣近處彼此連接；子囊羣線形，頗近葉邊，線狀體密生，端具杯狀之膨大細胞一個。

分布： 雲南，緬甸及交趾。

本種爲本區域內之特產，葉體寬廣，爲本屬特異之種。

圖註： 1-2 本種全形(自然大)， 3. 葉體之一部，表示葉脈及子囊羣(放大二倍)， 4. 地下莖上之鱗片(放大十二倍)， 5. 子囊羣中之線形體(放大一百倍)。

VITTARIA FORRESTIANA Ching

寬書帶蕨

C. R. Feng Del. et Lith.

PLATE 145

ANTROPHYUM FORMOSANUM Hieronymus

POLYPODIACEÆ

ANTROPHYUM FORMOSANUM Hieronymus, Hedwigia 57: 210 (1915); C. Chr. Ind. Fil. Suppl. II. 4 (1916).

Antrophyum plantagineum Christ (non Kaulf.), Bull. Herb. Boiss. II. 4: 610 (1914).

Rhizome short, erect, densely scaly at the base of stipe; *scales* lanceolate, fusco-brown, thin, iridescent, serrulate with hair-pointed tip; *fronds* fasciculated, sessile, lanceolate, 8-15 cm long, 1.2-1.8 cm broad, acuminate, gradually attenuate towards base; *texture* herbaceous, glabrous on both sides, no midrib; *venation* reticulated, fine but distinct against light; *sori* linear, following the course of grooved veins, *paraphyses* broad, ribbon-like.

Kwangtung: Lohfau Shan, *N. K. Chun 41480*, July 2, 1930. Kwangsi: Yao Mar Shan, Lin-yin Hsien, *R. C. Ching 7082* (1928).

Formosa: Kushaku, *Faurie 675* (type), June, 1903; *Hancock 2*; *Steere*; Takow, *A. Henry*; *Swinhoe* (1870); *Playfair* (1889).

From other species of the genus known in the region, our fern can be easily distinguished by its very broad and ribbon-like paraphyses in the sori and much thinner fronds. Our plate is based upon a specimen from Kwangtung (leg. N. K. Chun 41480), which matches the type from Formosa very well.

Plate 145. Fig. 1. Habit sketch (natural size). 2. Portion of frond, showing venation and sori (× 3). 3. Scale from rhizome (×30). 4. Paraphyses from sorus (× 80).

第一百四十五圖

車前蕨(水龍骨科)

ANTROPHYUM FORMOSANUM Hieronymus

地下莖短而直立，端具褐棲色膜質且富曲光性之披針形鱗片；葉簇生，無柄，寬披針形，長八至十五糎，寬一·二至一·八糎，漸尖頭，向基部最狹，紙質，兩面光滑，無中肋，小脈網狀，網眼垂直，不具小脈；子囊羣線形，隨網脈分佈而凹入葉質內，線狀體爲寬帶狀。

分布： 廣東，廣西及台灣。

本種爲本區域內之特產，其異於本屬其他之種者，爲其寬帶形之線狀體是也。

圖註： 1. 本種全形(自然大)， 2. 葉體之一部，表示葉脈及子囊羣(放大三倍)， 3. 地下莖上之鱗片(放大三十倍)， 4. 線狀體(放大八十倍)。

ANTROPHYUM FORMOSANUM Hieronymus

車　前　蕨

C. R. Feng Del. et Lith.

PLATE 146

SAXIGLOSSUM TAENIODES (C. Chr.) Ching

POLYPODIACEÆ

SAXIGLOSSUM TAENIODES (C. Chr.) Ching, Contr. Inst. Bot. Nat. Acad. Peiping **2:** 2 t. 2 (1933); C. Chr. Ind. Fil. Suppl. III. 170 (1934).

Cyclophorus taeniodes C. Chr. Ind. Fil. 201 (1905); Acta Hort. Gothob. **1**: 106 (1924).

Polypodium angustissimum Baker (non Fée, 1867), Ann. Bot. **5**: 472 (1891); Christ, Nuov. Giorn. Bot. Soc. Ital. n. s. **4**: 97 t. 3. f. 1. (1897).

Niphobolus angustissimus Diels in Engl. u. Prantl: Nat. Pflanzenfam. **1**: 4. 326 (1899); Engl. Jahrb. 29: 207 (1900); Giesen. Farngatt. Niph. 183 (1901); Christ, Bull. Acad. Géogr. Bot. (1902) 220 c. fig.

Niphobolus Cavalerianus Christ, Bull. Acad. Géogr. Bot. (1904) 107.

Cyclophorus Cavalerianus C. Chr. Ind. Fil. 198 (1905).

Cyclophorus Sasakii Hayata, Ic. Pl. Form. **6**: 158 (1916); Ogata, Ic. Fil. Jap. **4**: t. 158 (1931).

Rhizome wiry, wide-creeping, densely scaly; *scales* at growing tips ovate-lanceolate, bright rufo-brown, with spread hair-pointed tip, on old parts, dark-brown, acuminate, peltately affixed; *frond* far apart, uniseriate 3-9 cm long, 1.5-3.5 mm broad, narrowly linear, sessile or shortly petiolate, articulated to rather a high pseudopodium, rigidly coriaceous, margin strongly revolved, upperside with a few stellate hairs at first, becoming naked at last, midrib deeply grooved, prominent underneath, underside densely clothed in brown wooly stellate hairs with fine, needle-like arms along the midrib; *venation* completely hidden, reticulated with 2-rows of elongated, exappendiculate areolæ, veinlets free towards margin and ended in ovate hydathodes; *sori* linear, straight, one-rowed between margin and midrib, completely covered by the inwardly produced flap-like leaf-margin when young, which is more or less pushed open by the growing sori later; *spores* ovoid, smooth, transparent.

By the present distribution, this peculiarly distinct fern is known from Hupeh, Shensi, Kweichow, Chekiang, Kwangtung, Kwangsi and Szechwan, besides the Island Formosa. A complete enumeration of specimens was already given in my previous paper on the genus, to which readers are referred for more detailed information.

Plate 146. Fig. 1. Habit sketch (natural size). 2. Portion of front, showing venation and position of sori (after Giesenhagen). 3. Cross section of a soriferous frond, showing the indusium-like marginal lip and soral chamber (in moist state). 4. The same, in dry state. 5. Scale from rhizome. 6. Cross section of rhizome. 7. Cross section of the base of stipe. 8. Spores. 9. Stellate hair from the underside of frond. 10. The same from the upperside of frond (2-10 greatly enlarged).

第一百四十六圖

擬石葦(水龍骨科)

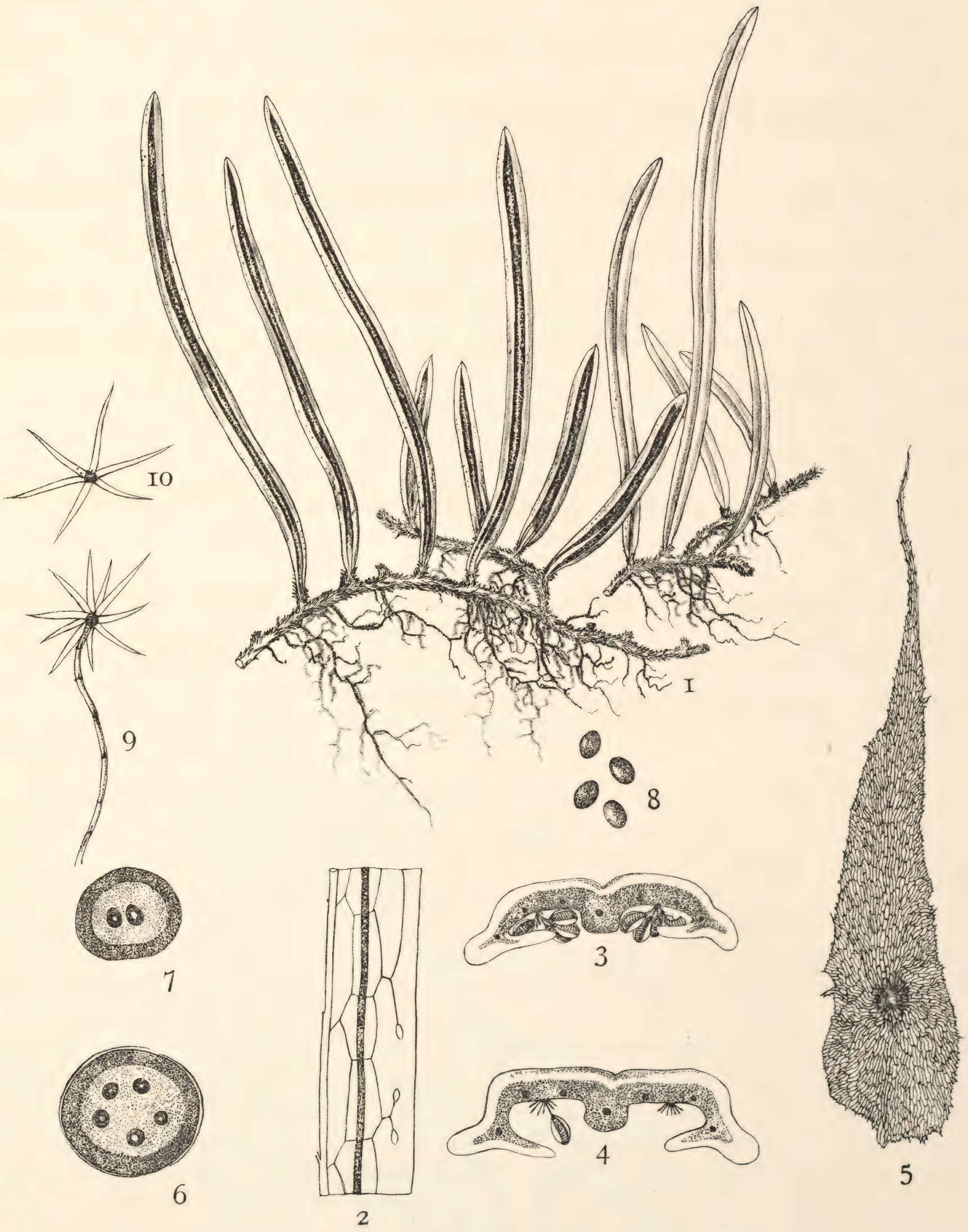
SAXIGLOSSUM TAENIODES (C. Chr.) Ching

地上莖細長，蔓生，緣直立之岩壁橫行，具卵披針形之紅櫚色鱗片；葉散生，一列，長三至九粉，寬一·五至三·五糎，線形，無柄或具短柄，節狀着生於莖上，硬革質，葉緣向下面強度反捲，上面切具星芒狀之疏毛，久則脫落，中肋上面呈溝狀，下面凸出，密被黃色星芒狀毛，小脈不見，成二列網狀，網眼垂直，或具小脈或否；子囊羣線形，位於中肋與葉邊之間，幼時全爲反捲之葉邊所蓋，嗣則由一裂縫露上。

分布： 湖北，四川，陝西，廣東，廣西，浙江及台灣。

此爲本屬僅有之種，昔人以之隸於石葦屬，據余最近之研究，覺其實與該屬不類，故特闢一新屬以位之。

圖註： 1. 本種全形(自然大)， 2. 葉體一部，表示其葉脈及子囊羣之位置， 3. 濕潤葉之橫切面， 4. 乾葉之橫切面， 5. 地上莖之鱗片， 6. 地上莖之橫切面， 7. 葉柄之橫切面， 8. 胞子， 9. 葉下面之星芒毛， 10. 葉上面之星芒狀毛(2—10均放大)。



SAXIGLOSSUM TAENIODES (C. Chr.) Ching

擬　石　葦

C. R. Feng Del. et Lith.

PLATE 147

PYRROSIA SHEARERI (Baker) Ching

POLYPODIACEÆ

PYRROSIA SHEARERI (Baker) Ching, Bull. Bot. Soc. China **1**: 64 (1935).

Polypodium Sheareri Baker, Journ. Bot. (1875) 201.
Niphobolus Sheareri Diels in Enlg. u. Prantl: Nat. Pflanzenfam. **1**: 4. 325 (1899).
Cyclophorus Sheareri C. Chr. Ind. Fil. 201 (1905); Acta Hort. Gothob. **1**: 105 (1924); pro parte.
Polypodium Drakeanum Christ, Bull. Herb. Boiss. **6**: 871 (1898), quoad pl. Faberi.
Cyclophorus Drakeanus (non C. Chr. 1905), L. H. Bailey, Gentes Herb. (1920) 9.
Cyclophorus Drakeanus f. *maxima* Wu, Bull. Dept. Biol. Sun Yatsen Univ. No. **3**: 338 t. 150 (1932).
Cyclophorus Sheareri f. *maxima* C. Chr. Bull. Dept. Biol Sun Yatsen Univ. No. **6**: 18 (1933).

Rhizome thick, short-creeping, densely scaly; *scales* ferruginous, lanceolate, serrate; *fronds* subcæspitose, stipe 18-30 cm long, thick, stout, articulated at base, dark olive-green, when young, densely clothed in long-stipitate stellate hairs, lamina 15-30 cm long, 3-6 cm broad, broadly lanceolate, acuminate, somewhat broadened towards unequally subauriculated cordate or rounded base; *texture* rigidly coriaceous, green, densely pitted and also sparcely stellately hairy above when young, densely clothed underneath in thick, reddish-brown persistent indumentum consisting of appressed stellate uniform hairs with short broad arms on the same plan, midrib prominent on both sides, green underneath, dark oblive-green above; *lateral main veins* visible on both sides, oblique, *veinlets* completely hidden, copiously anastomosing with numerous included clavate veinlets; *sori* punctate, dorsal or subapical on included veinlets, distinct at first, finally subconfluent.

Kiangsi: Kiukiang, Lu-shan, *Dr. Shearer* (type) (1873); *Maires* (1880); *E. Faber 10* (1897); *Miss Reid* (1899); ibid., Paradise Pool, *DeVol 49, 51*, July 15, 1933; *N. K. Up 1776*; *A. N. Steward 4649*; *R. C. Ching 10635* (1934); Fen-cheng, Talou Shan, *Y. Tsiang 10340* (1931). Hunan: Singning Hsien, *H. F. Chow 41*; Tien-chaoping, *Ingvald Ofstad 7337* in herb. Univ. Nanking. Anwhei: Chui Hua Shan, *R. C. Ching 7583* in herb. Univ. Nanking; Wu Yuan Hsien, *R. C. Ching 8842*; Hwang Shan, *R. C. Ching 8910*. Chekiang: Ching Yuan Hsien, *R. C. Ching 2354* Tien Tan Shan, Ningpo, *C. Y. Chiao 14407*; *Sir E. Home* in herb. Hance; *Hancock 47* (1877); *C. W. Everard*. Kweichow: Pin-fa, *Cavalerie 1809*; Tungtze, *Y. Tsiang 5049*; *Esquirol 635*; Tsin-gay, *Bodinier 1743*; Gan-pin, *Perry* (1858); Kwei-yang, *Cavalerie 7024*. Hupeh: Patung, *Henry 5028, 1428, 2569, 2813*; *Wilson 309*. Szechwan: Nanchuan, *W. P. Fang 5840*; *Wilson 309*. Yunnan: Mengtze, *Henry 9116*; *Hancock 48*; Lan Kang, *Delavay 4954*; *Maire*; San Shan, *Ducloux 5102*; *H. T. Tsai 51491, 52338*. Fukien: Kuliang, *H. H. Chung 4294*. Kwangtung: North River, Taitung, Lokchong, *S. P. Ko 51889*; ibid., Kau Fung, *W. T. Tsang 20908*; Yüyuan, *S. P. How 53747, 52811*. Kwangsi: Miu Shan, Lu-chen, *R. C. Ching 6129*; Yao Shan, *S. S. Sin 438* (f. *maxima* Wu)

Also Formosa and Tonkin.

One of the most distinct species of the genus, the following species is the only close Chinese ally which differs in generally shorter and broader lamina on much longer stipe and in very dense loose indumentum on the underside of leaves, consisting of long, needle-like arms not on the same plan.

Plate 147. Fig. 1. Habit sketch (natural size). 2. Portion of lamina, showing venation (× 4). 3. Scale from rhizome (× 15). 4. Stellate hairs from the underside of lamina (× 60). 5. The same from stipe (× 60). 6. The same from the upperside of lamina (× 60). 7. Spores (×300).

第一百四十七圖

廬山石葦(水龍骨科)

PYRROSIA SHEARERI (Baker) Ching

地下莖肥厚，亞橫行，具銹黃色之披針形鱗片；葉亞簇生，柄長十八至三十粉，堅強，基部節狀着生，黝綠色，幼時具星芒狀之長足剛毛，旋脫落，葉體爲披針形，長十五至三十粉，寬三至六粉，漸尖頭，向基部漸闊，呈不等耳形，厚革質，綠色，上面具小孔，初被星芒狀毛，漸變光滑，下面具淡黃色宿存之厚星芒狀毛，芒短而闊，在同一平面；側脈上下可見，斜出，小脈網狀，不見，網眼具小脈；子囊羣圓形，着生於小脈之端或端下，初甚明顯，旋呈亞合生。

分布： 江西，湖南，浙江，貴州，湖北，四川，福建，雲南，廣東，廣西；台灣及交趾亦產之。

本種爲本屬特異之種，在廬山最爲普通，其形體頗似後種，惟葉下面之毛較厚而鬆，色鮮黃，其芒細長如針，且不在同一平面，故易與本種區別。

圖註： 1.本種全形(自然大)， 2.葉之一部，表示其葉脈(放大四倍)， 3.地下莖上之鱗片（放大十五倍)， 4.葉下面之星芒狀毛(放大六十倍)， 5.柄上之星芒狀毛(放大六十倍)， 6.葉上面之星芒狀毛(放大六十倍)， 7.胞子（放大三百倍）。

PYRROSIA SHEARERI (Baker) Ching

PLATE 148

PYRROSIA DRAKEANA (Franch.) Ching

POLYPODIACEÆ

PYRROSIA DRAKEANA (Franch.) Ching, Bull. Bot. Soc. China **1**: 64 (1935).

Polypodium Drakeanum Franch. Nouv. Arch. Mus. II. **7**: 165 (1883); Christ, Bull. Herb. Boiss. **6**: 871 (1898).

Niphobolus Drakeanus Diels in Engl. Jahrb. **29**: 206 (1900); Giesen. Farngatt. Niph. 117 (1901); Christ, Bull. Soc. Bot. France **52**: Mém. 1. 24 (1905).

Cyclophorus Drakeanus C. Chr. Ind. Fil. 198 (1905); Contr. U. S. Nat. Herb. **26**: 326 (1931).

Polypodium Sheareri Christ (non Baker), Nuov. Giorn. Bot. Soc. Ital. n.s. **4**: 95 (1897).

Cyclophorus Sheareri C. Chr. Acta Hort. Gothob. **1**: 105 (1924, non 1905), pro parte.

Niphobolus Sheareri Christ (non Diels), Bull. Soc. Bot. France **52**: Mém. 1. 26 (1905).

Niphoholus inaequalis Christ, Bull. Soc. Bot. France **52**: Mém. 1. 25 (1905); Bull. Acad. Géogr. Bot. (1906) 109.

Cyclophorus inaequalis C. Chr. Ind. Fil. 199 (1905).

Rhizome thick, short-creeping, densely scaly; *fronds* subcæspitose, stipe thick, stout, 13-17 cm long or much longer, ferruginously stellate hairy, lamina oblong-ovate or oblong-lanceolate, 13-16 cm long, or longer, to 6 cm broad, short acuminate, base obliquely truncate or rotundo-cuneate, slightly decurrent; *texture* rigidly coriaceous, upperside green and sparcely hairy when young, underside densely clothed in thick wooly brown persistent and loose indumentum consisting of long needle-like arms not on the same plan, midrib prominent on both sides, hairy underneath; *lateral main veins* scarcely visible; *sori* punctate, subconfluent at last.

Shensi merid: *David* (type), March, 1873; Chui-kio-suen, *Giraldi*, Sept. 29, 1897; *Purdom 97*; Thai-pei Shan, *Giraldi*. Kansu: Kua-tsa, *Meyer 1818*, Nov. 5, 1914; *Licent 4934* (1919). Hupeh: Patung, *Henry 3684*; *Wilson 1909, 1727, 2629*; *Henry 1428* (type of *Niph. inæqualis*); Shin-Shan Hsien, *S. S. Chien 8324* in herb. Univ. Nanking; Ichang, *Henry 2569*. Kweichow: Gan-pin, *Bodinier 1743*; Pin-fa, *Cavalerie 512*; *Esquirol 635, 699*; *Cavalerie 1807, 1809* (without exact locality). Sze-chwan: Mt. Omei, *Wilson 5323*; *Faber 1076*; *Brown*; *W. P. Fang 2710*, on tree; Nan-chuan: *Bock & Rosthorn 1713, 1059, 3123*; Ta-chien-lu, *Harry Smith 4930*; *Prince Henri d'Orleans*; *Y. Chen*; Pin-yi-pu, *Harry Smith 1984, 4930, 4825*; Moupin, *David* (1870); *T. Tang 787* (1932). Yunnan: Tsekou, *Monberg 275* (1908); *Souliè* (1898); Mengtze, *Henry 9114, 9116*; *Hancock 51* (Kew No); Salwin, *Forrest 16195, 28940*; Mekong, *Forrest 13119* (1914), *19842, 19841*; Kiang Yu Shan noar Lan-pou, *Delavay 1734*; Ta-pin-tze, *Delavay 3250, 4518*; Pe-yen-tsin, *Simon Ten*; *Ducloux 4984*; In-on, *Maire*. Tibet orient.: *Souliè 588*.

A distinct pretty fern known only from mountains of comparatively high altitude in the western and north-western part of China; its distinction from *Py. Sheareri* (Baker) is already noted above. *Niph. inæqualis* Christ represents a slender form with lanceolate lamina on stipe nearly twice as long.

Plate 148. 1. Habit sketch (natural size). 2. Portion of lamina, showing venation (× 3). 3. Stellate hairs from the underside of lamina (× 20). 4. The same from stipe (× 20). 4. Scale from rhizome (× 10).

第一百四十八圖

氈毛石葦(水龍骨科)

PYRROSIA DRAKEANA (Franch.) Ching

本種形體頗類前種，所異者爲葉體較寬而葉柄較葉體爲長，間有二倍之者，爲其葉下面之氈毛較厚而鬆，且其芒細長如針，不在同一平面，故得易於識別，再本種之分佈概限於中國西南西北部之高山，與前者之限於中部及南部者顯然有別。

分布： 陝西，湖北，四川，西康，雲南，西藏東部。

圖註： 1. 本種全形(自然大)， 2. 葉體之一部，表示其葉脈(放大三倍)， 3. 葉體下面之星芒狀毛(放大二十倍)， 4. 葉柄上之星芒狀毛(放大二十倍)， 5. 地下莖上之鱗片(放大十倍)。

PYRROSIA DRAKEANA (Franch.) Ching

氈毛石葦

C. R. Feng Del et Lith.

PLATE 149

ARTHROMERIS HIMALAYENSIS (Hk.) Ching

POLYPODIACEÆ

ARTHROMERIS HIMALAYENSIS (Hk.) Ching, Contr. Inst. Bot. Nat. Acad. Peiping **2**: **99 (1933).**

Polypodium himalayense Hk. Sp. Fil. **5**: 91(1863); Syn. Fil. 369 (1867); Diels in Engl. u. Prantl: Nat. Pflanzenfam. **1**: 4. 321 (1899); Christ, Farnkr. d. Erde 114 (1897); Bull. Soc. Bot. France **52**: Mém. 1. 19 (1905), pro parte; C. Chr. Ind. Fil. 533 (1905).

Pleopeltis himalayensis Bedd. Ferns Brit. Ind. t. 318 (1869); Handb. Ferns, Brit. Ind. etc. 372 (1883).

Polypodium venustum Wall. Cat. n. 305 (1828, nom. nud.); Clarke, Trans. Linn. Soc. II. Bot. **1**: 566 (1880), non Desv. 1811.

Pleuridium venustum J. Sm. Cat. Cult. Ferns 10 (1857).

Arthromeris venusta J. Sm. Hist. Fil. 111 (1875).

Polypodium venustum var. *niphoboloides* Clarke, l.c. 567.

Rhizome thick, woody, wide-creeping, glaucous, sparcely scaly; *scales* linear from orbicular base, bright brown; *frond* far apart, stipe firm, glossy, dark straminous, 1-15 cm long, glabrous, lamina 20-45 cm long, 15-20 cm broad, imparipinnate; *pinnæ* 1-5-jugate, articulated to rachis, opposite, 5-7 cm apart, sessile, 12-16 cm long, 3-4 cm broad, oblong-lanceolate, caudate, base roundish or subcordate, margin entire but wavy and provided with a very broad whitish membrane; *texture* subcoriaceous, both sides densely glandular hairy, costa underneath with long spread hairs; *lateral main veins* fine but distinct, areolæ fine, with copious included veinlets; *sori* large, rounded, irregularly 2-seriate, of 3-4 each between main veins, exindusiate.

This distinct and pretty fern can easily be distinguished from its relatives by oblong-lanceolate and caudate, densely glandular hairy pinnæ with a very broad whitish membranaceous margin.

Yunnan: South of Red River, Manmei, *Henry 9747*; Tse-tchou-pa, *Maire*; Song-san, *Delavay 2612*.

Sikkim-Himalayas, from 6,000 to 10,000 ft. elevation, common.

Var. **furcans** Ching, l.c. p. 100.

Habit of *Cyrtomium caryotideum* Presl, with irregularly lacerato-forked pinnæ. Known only from Sikkim (leg. Duthie 5177).

Plate 149. Fig. 1. Habit sketch (natural size). 2. The same (natural size). 3. Portion of pinna, showing venation and sori (× 5). 4. Scale from rhizome (× 20). 5. Hairs from costa (× 80). 6. Glandular hairs from underside of lamina (× 80). 7. Rachis with articulated base of the lateral pinna (× 10).

第一百四十九圖

琉璃節肢蕨(水龍骨科)

ARTHROMERIS HIMALAYENSIS (Hk.) Ching

地下莖肉質，肥厚，蔓生，灰白色；鱗片疏生，線形，具卵圓形之基部，黃色；葉疏生，柄長達十五粉，堅實，深稻桿色，有光澤，光滑，葉體長二十至四十五粉，寬十五至二十粉，奇數羽狀分裂，小葉一至五對，節狀着生於中肋，對生，無柄，長十二至十六粉，寬三至四粉，闊披針形，尾狀，基部圓形或亞心臟形，全緣，具一極寬之薄膜質，兩面絨毛密生，側脈明顯，斜出，下面具長剛毛，小脈網狀，厚紙質；子囊羣圓形，呈不規則之二列，無蓋。

分布： 雲南，緬甸及印度北部。

本種爲本屬特殊之種，在我國惟雲南僅見之；此外尙有一種變種，產於西京，其小葉四緣深裂。

圖註： 1. 本種全形(自然大)， 2. 同上， 3. 小葉之一部，表示其葉脈及子囊羣(放大五倍)，4. 地下莖上之鱗片(放大二十倍)， 5. 側脈下面之剛毛(放大八十倍)， 6. 葉下面之絨毛(放大八十倍)， 7. 基部葉節小着狀生於中肋情形(放大十倍)。

ARTHROMERIS HIMALAYENSIS (Hk.) Ching

琉璃節肢蕨

C. R. Feng Del. et Lith.

PLATE 150

ARTHROMERIS LUNGTAUENSIS Ching

POLYPODIACEÆ

ARTHROMERIS LUNGTAUENSIS Ching, Contr. Inst. Bot. Nat. Acad. Peiping **2**: 98 (1933).

Polypodium lungtauense Ching in C. Chr. Ind. Fil. Suppl. III. 152 (1934).

Rhizome wide-creeping, 4-5 mm thick, terete, atratous; *scales* dense, ovate, acuminate, grayish-brown with scarious margin; *frond* far apart, stipe 3-10 cm long, dark straminous, terete, slender, naked, lamina oblong or deltoid, 7-30 cm long, impari-pinnate; *pinnæ* 1-3-8-jugate, the terminal pinnæ similar to the lateral ones, which are patent, sessile, 6-10-16 cm long, 2-3 cm broad in the middle, gradually acuminate, base equal, cordate, subamplexicaulous, margin entire with a cartilaginous line all around; *lateral veins* prominent, 4 mm apart, obliquely patent, transversal veinlets 4-6 between costa and margin, intervening veinlets anastomosing with included veinlets; *texture* chartaceous, brownish when dried, both sides moderately villose; *sori* rather small, rounded, dark brown, bi-seriate, of 3-4 each between main veins, glabrous, with a few protruding hairs from veinlets underneath.

Kwangtung: Lungtau Shan, Iu village, *To Kang Ping 12430* ex herb. Lingnan Univ., June 7, 1924: Tsungfa-Lungmoon Districts, *Tsang Wei Tak 20508*, May 18, 1932; Yüyuan, *S. P. Ko 53074*, July 13, 1933; Lohfau Shan, *C. Ford 14* (1883); *C. O. Levine & McClure 6828*; *Levine 1545*; *B. C. Henry 22210* in herb. Hance, May, 1863.

A critical species, which differs from *A. himalayensis* (Hk.) in not densely pubescent surfaces of pinnæ of a different outline with a narrowly cartilaginous margin; from *A. Lehmanni* (Mett.) it differs in sparcely villose leaf surfaces and much smaller size.

Plate 150. Fig. 1. Habit sketch (natural size). 2-3. The same (natural size). 4. Portion of pinna, showing venation and sori (× 5). 5. Scale from rhizome (× 24). 6. Hair from lamina (× 60).

第一百五十圖

粵節肢蕨(水龍骨科)

ARTHROMERIS LUNGTAUENSIS Ching

本種形體頗類前種，惟較小，小葉僅具線狀骨質葉緣，兩面僅剛毛疏生，故得易於識別。

分布： 廣州北部山中。

圖註： 1. 本種全形(自然大)， 2-3. 同上， 4. 小葉之一部分，表示葉脈及子囊羣(放大五倍)，5. 地下莖上之鱗片(放大二十倍)， 6. 葉體上之剛毛(放大六十倍)。

ARTHROMERIS LUNGTAUENSIS Ching

粵 節 肢 蕨

C. R. Feng Del. et Lith.

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